ARS 43-124
October 1960

Changes in

ORGANIZATION, COSTS, AND RETURNS

on Dairy-Hog Farms in Southeastern Minnesota

1930-1959

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service

ACKNOWLEDGMENTS

This study was conducted under the supervision of Wylie D. Goodsell with helpful suggestions and constructive evaluation from Herbert C. Fowler, both of whom are with the Farm Economics Research Division, ARS. For information concerning similar data in other areas and for questions relating to the data used in the preparation of this report, write the Farm Economics Research Division, Agricultural Research Service, United States Department of Agriculture, Washington 25, D. C.

Prepared in

Farm Economics Research Division

Agricultural Research Service

United States Department of Agriculture

Washington, D. C.

CONTENTS

	Page
SUMMARY	1
INTRODUCTION	2
Area studied	2
Farms studied	5
Sources of data	6
LAND USE AND CROP PRODUCTION	6
Crop acres	7
Crop yields	7
Crop production	8
LIVESTOCK AND POULTRY ENTERPRISES	9
Livestock and poultry numbers	9
Feed fed to livestock	10
Milk production	11
Hog production	13
FARM INCOME	13
Gross farm income	13
Total operating expense	15
Net farm income	16
FARM CAPITAL	17
FARM PRICES	21
Prices received for products sold	21
Prices paid for production goods and services	23
ALLOCATION OF NET FARM INCOME	23
Capital charge	26
Returns to operator, family labor, and management	26
GROSS PRODUCTION AND INPUTS	26
Farm production and productivity of resources	26
Total inputs	29
APPENDIX	29
Comparison of effects of 1947-49 and 1930-58 price weights in estimating inputs, production, and related factors, Minnesota dairy-hog farms	29
Definition of terms	31
Tables	34

CHANGES IN ORGANIZATION, COSTS, AND RETURNS ON DAIRY-HOG FARMS IN SOUTHEASTERN MINNESOTA 1930-59

By

Austin S. Fox, Agricultural Economist
Farm Economics Research Division

SUMMARY

In the most recent 30-year period, dairy-hog farmers in southeastern Minnesota increased the size of their farm organization and adopted improved production practices. Additional costs were overshadowed by the greater additional returns, so that net farm incomes were nearly 7 times higher in 1956-59 than in 1930-33; ($3,944 in 1956-59 and $584 in 1930-33). After World War II, however, farm incomes leveled off but costs continued to rise. During this 30-year period, these farmers experienced the effects of a major depression and a severe drought in the 1930's, World War II in the early forties, the Korean War in the early 50's and a defense-oriented national economy since. The effects of gradual changes are more apparent when viewed over the years. Also, the influence of weather and that of other year-to-year changes, when viewed over a period of years, are less likely to obscure underlying trends.

From 1930-34 to 1959, the average size of farm increased by about 24 acres and crop yields by more than 70 percent, with most of the increases occurring after 1950. The higher yields were obtained chiefly by using more fertilizer and lime and higher quality seed, plus more and additional kinds of fungicides and insecticides.

Both milk cow numbers and production per cow increased more than 40 percent during the period. Production of pork fluctuated considerably more from year to year, but overall, it increased by about a third. In the later years, better management resulted in higher feeding rates and more efficient production of higher quality livestock. The increase in both crop and livestock production resulted in more than a doubling of total farm production between 1930-34 and 1959, with almost half of the increase occurring after 1950.

This greater production was realized by using more total capital and by substituting machines and other goods and services of nonfarm origin for horse and man labor. Although the constant dollar value of machinery remained fairly stable throughout the 1930's, it doubled from the early forties to 1959. Also, farm operations in the latter years were performed with one-fourth less man labor than had been used earlier and with a negligible amount of horse labor. In 1959, production per hour of labor was about twice as high as in the early forties, but production per unit of capital was considerably lower.

In general, prices received for products sold increased less than prices paid for goods and services used in production. However, the relatively greater increases in production and the threefold increase in wage rates encouraged the shift toward use of machine labor.

The higher incomes resulting from the combined effect of these changes allowed returns allocated per hour of operator and family labor to increase from almost nothing in 1930-33 to about $0.36 in 1940-44 and $0.56 in 1956-59. These returns compare favorably with those on dairy farms in Wisconsin, but they are generally less favorable than returns on many of the Corn Belt farms to the South.

As these returns pertain to commercial farms whose operators are fully em-

ployed, they include earnings from farm operations only. They do not include income from off-farm employment or from nonfarm sources. Neither do they include annual gains or losses from increases or decreases in the prices of farm assets because this income is not realized unless farms are sold. Farmers included in this study who bought their farms about 30 years ago and sold them recently have realized capital gains averaging more than $80 per acre.

INTRODUCTION

This report summarizes changes in organization, production, costs, and returns on commercial family-operated dairy-hog farms in southeastern Minnesota from 1930 through 1959. The information should be helpful to farmers and others in developing farm plans, to administrators and legislators in developing farm programs, to students and research workers in further research and budget development, and to those who do business with farmers.

This report is part of a larger overall project. The data presented here supplement similar information for 31 other types of farms in the United States. [1] In each instance, data pertain to a particular type of farm in an area rather than to all farms in the area. Thus estimates of net farm income reported here are not necessarily equal to the average income for all farmers in southeastern Minnesota. They apply to dairy farms that have secondary hog enterprises. Data for other types of farms, which are fairly numerous in some parts of this area, are excluded.

Area Studied

The area in which these dairy-hog farms lie comprises the 18 counties in southeastern Minnesota that make up Economic Areas 6 and 6B as delineated by the Bureau of the Census (fig. 1). In 1954, the area had about 3.7 million acres of harvested cropland and 1.8 million acres of other farmland including 0.7 million acres of woodland. About 10 percent of the cropland was used only for pasture.

Feed crops account for most of the cropland harvested (fig. 2). Customarily, these crops are fed to livestock and poultry in the immediate area, but only three-fourths of the corn harvested in 1954 was fed on the farms where produced.

Dairying is the chief farm enterprise in the area. According to the 1954 Census of Agriculture, 69 percent of the operators of commercial farms sold fluid milk and 16 percent sold cream. Their combined sales (of which three-fourths were from commercial dairy farms) of 2.8 billion pounds of milk equivalent in that year accounted for 37 percent of the Minnesota State total. Sales of milk and cream amounted to $81 million, compared with $39 million for hogs (of which more than a third were from commercial dairy farms), $28 million for cattle and calves, and $23 million for poultry and eggs. Crops harvested in 1954 included 46 million bushels of corn, 37 million bushels of oats, and 5 million bushels of soybeans.

The area is bounded on the south and west by the Corn Belt and on the north and east by areas devoted largely to dairying. In some parts of the area, dairy cattle, beef cattle, and hogs compete on fairly equal terms, but in much of the area the dairy enterprise is generally considered to have an advantage over the others. However, most farmers in the area have more than one livestock enterprise.

[1] Estimates of costs and returns for these representative types of farms are published annually in Farm Costs and Returns, Commercial Family-Operated Farms by Type and Location, U. S. Dept. Agr., Agr. Inform. Bul. 176. A discussion of terms not explained in the text appears in the appendix of this report. Supplementary information is available in Major Statistical Series of the U. S. Department of Agriculture, How They Are Constructed and Used, Vol. 3, Gross and Net Farm Income, U. S. Dept. Agr., Agr. Handb. 118, pages 81 to 104.

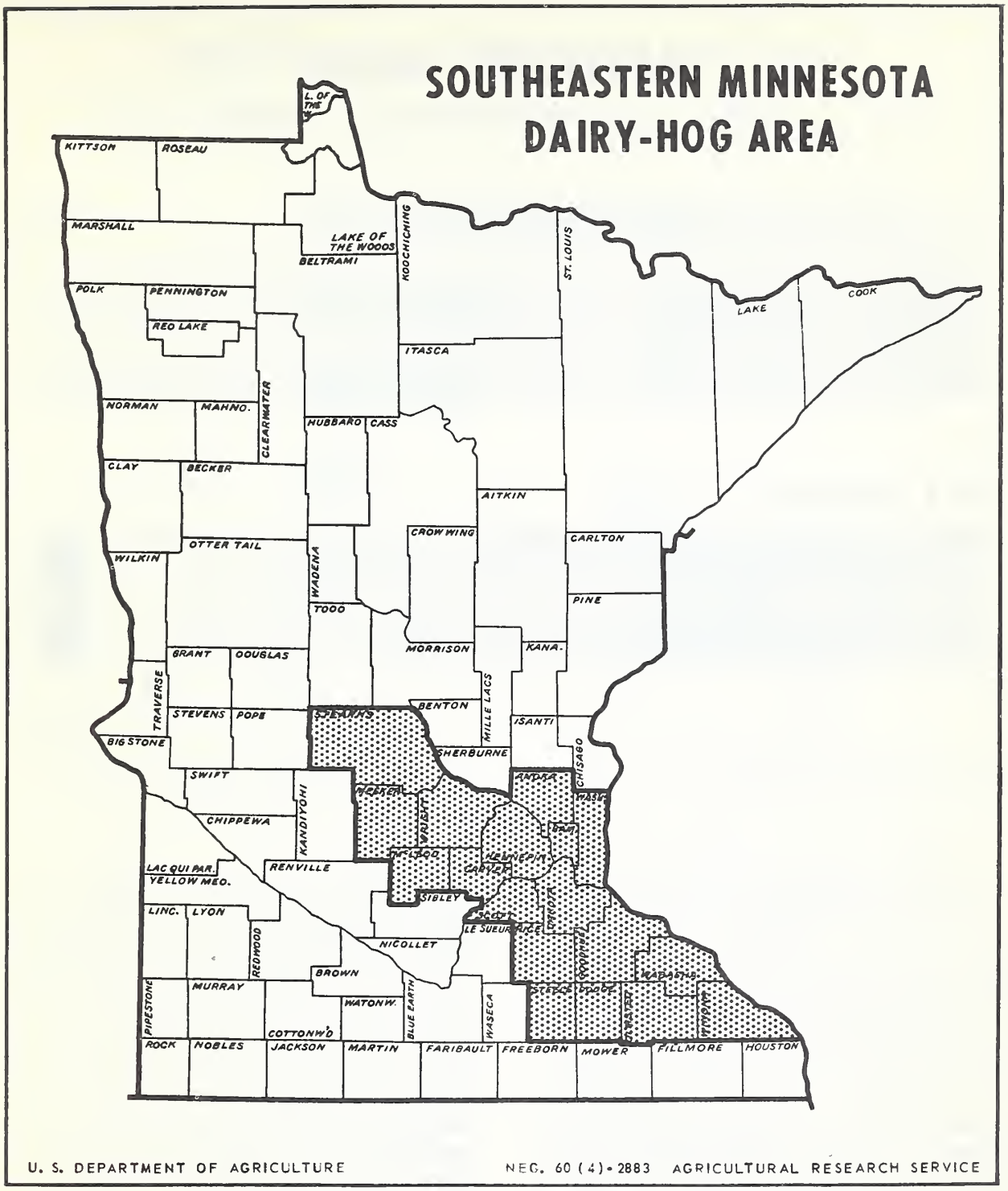
SOUTHEASTERN MINNESOTA
DAIRY-HOG AREA
KITTSON
ROSEAU
L. OF THE WOODS
MARSHALL
LAKE OF THE WOODS
BELTRAMI
KOOCHICHING
ST. LOUIS
LAKE
COOK
POLK
PENNINGTON
RED LAKE
ITASCA
NORMAN
MAHNO.
CLEARWATER
HUBBARD
CASS
CLAY
BECKER
AITKIN
CROW WING
CARLTON
WILKIN
OTTER TAIL
WADENA
PINE
TODD
MORRISON
KANA.
GRANT
DOUGLAS
TRAVERSE
STEVENS
POPE
BENTON
MILLE LACS
ISANTI
BIG STONE
SHERBURNE
SWIFT
CHISAGO
CHIPPEWA
KANDIYOHI
WRIGHT
HENNEPIN
CARVER
RAM.
RENVILLE
LAC QUI PAR.
YELLOW MED.
SIBLEY
LINC.
LYON
REDWOOD
NICOLLET
LE SUEUR
DAKOTA
WASHINGTON
BROWN
KANDIYOHI
PIPESTONE
MURRAY
WATONW.
BLUE EARTH
WASECA
STEELE
DODGE
OLMSTED
WINONA
COTTONWD
ROCK
NOBLES
JACKSON
MARTIN
FARIBAULT
FREEBORN
MOWER
FILLMORE
HOUSTON
U. S. DEPARTMENT OF AGRICULTURE
NEG. 60 (4)-2883 AGRICULTURAL RESEARCH SERVICE

Figure 1

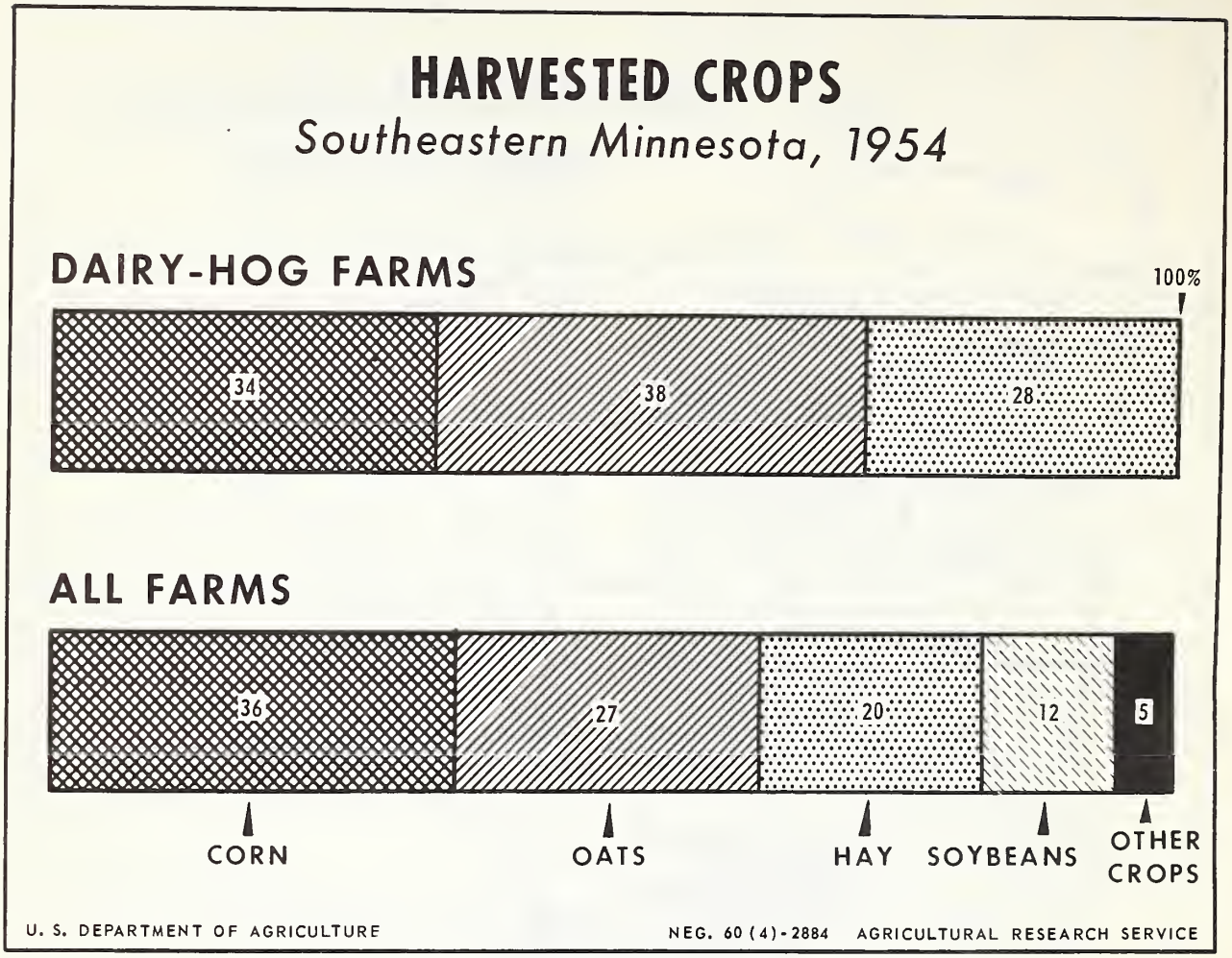

Figure 2

General climatic conditions are fairly uniform throughout the area but there is considerable season-to-season and year-to-year variation. The average rainfall in the area is about 28 inches. Of this, about 17 inches occur during the normal growing season from April 1 to August 31. Year-to-year variations within the growing season are usually less than for the entire year. Temperatures normally average about 12 degrees in January, 72 degrees in July, and 62 degrees during the growing season. Grasses and small grains do well in this climate, but corn harvested for grain is handicapped by the short growing season and the rather cool summer nights.

Soils and topography vary over a fairly wide range from county to county, from farm to farm, and frequently from field to field on a given farm. Most of the soils are classified as either silt loams or clay loams with generally heavy subsoils, but some are light and sandy. The topography varies from nearly flat to decidedly hilly. The steepest slopes are in the counties that border the Mississippi River; the more level land is toward the north and west. Although 10 percent of the area has a drainage problem, most of the land is naturally well drained. In some places, the surface soils are deficient in lime; in others they tend to be low in phosphorous. Also, some soils have a considerably higher nitrogen content than others.

With such a variety of soils and topography, it is not surprising that the use of land also varies considerably. Although corn accounted for a third of the cropland harvested in the area in 1954,

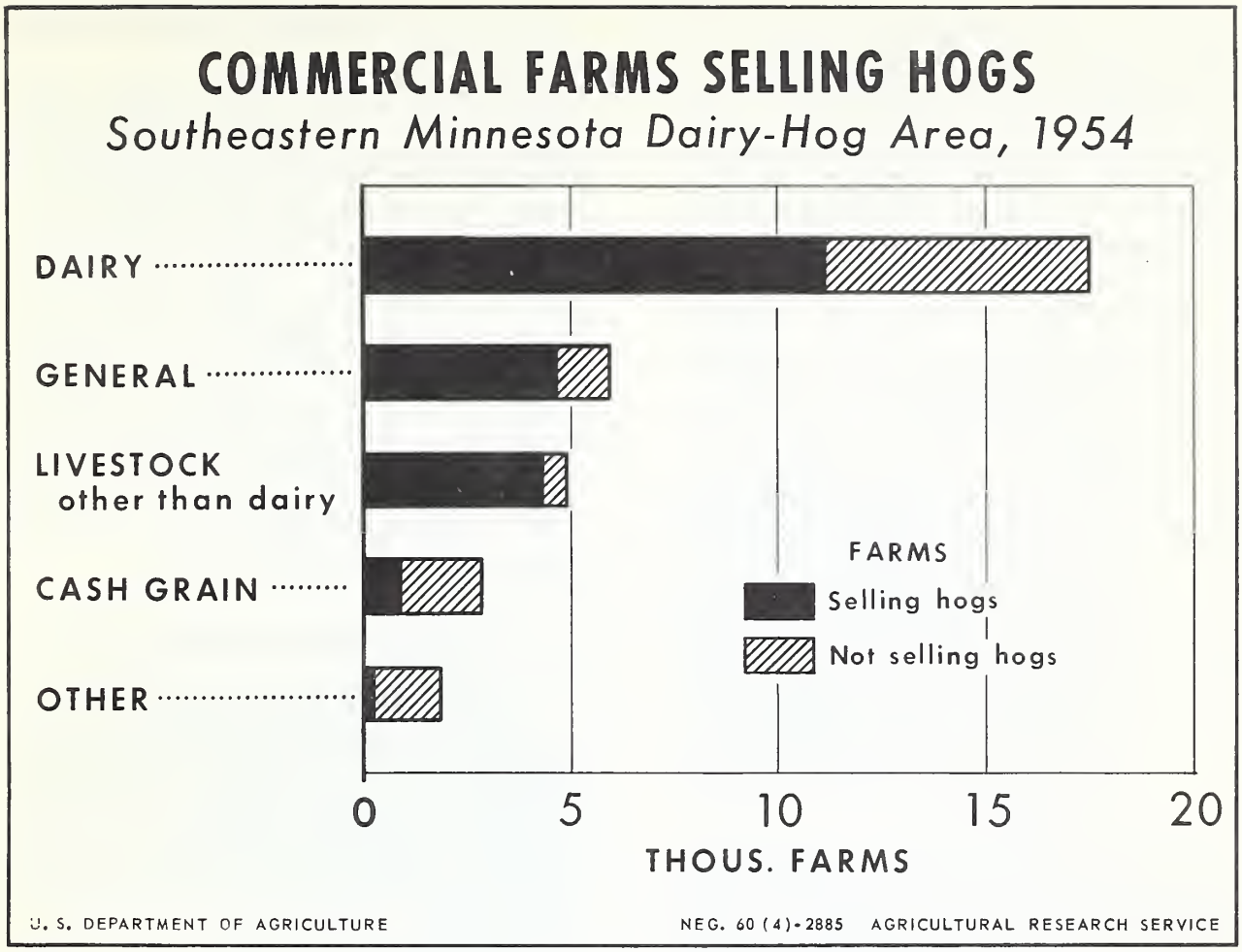

Figure 3

the proportion ran as high as 40 percent in some counties and as low as 27 percent in others. Among individual farms, the variation was even greater.

Of the approximately 33,000 commercial farms in the area in 1954, more than half were classified as dairy farms in the Census of Agriculture (fig. 3). About 65 percent of the operators of these dairy farms reported sales of hogs, and about 95 percent of all commercial farms were in economic classes II through V (with values of farm product sales between $1,200 and $25,000). A large percentage of the dairy farms from which hogs were sold and which were in economic classes II to V were considered to be commercial family-operated dairy-hog farms.

Farms Studied

This report deals with commercial family-operated dairy-hog farms in the specified area of southeastern Minnesota. On these farms, the dairy enterprise accounts for at least half of the total farm sales, but the hog enterprise is also important.

The data presented apply to a changing size of farm in the area, a size which in terms of total acres approximates the arithmetic mean of all commercial dairy farms and the median of commercial dairy farms in economic classes II through V, according to recent census definitions. In this discussion of dairy-hog farms, the average size of farm was changed over

time to reflect the trend in size of all dairy farms with hog enterprises.

Census data for individual farms of the specified type and size were used to establish a number of benchmarks. For example, livestock numbers and crop acreages for 1954 were based on a sample of farms which:

(1) Qualified as dairy farms;
(2) Reported the sale of 5 or more hogs;
(3) Had between 130 and 169 acres of farmland;
(4) Had at least 40 acres of cropland;
(5) Were operated by individuals who (a) were less than 70 years of age, (b) lived on the farm, (c) worked less than 100 days off the farm, (d) derived more than half their income from the sale of farm products, (e) were either full owners, part owners, or tenants (not hired managers), and (f) had been farming for more than a year.

The average (mean) size of farm in this sample was 153 acres. This was also the average for all commercial dairy farms in the area. These farms are large enough to provide reasonably full-time employment for the operator and part-time employment for other members of the family. About half of the farms reported the use of hired labor but in 1954, expenditures for hired labor amounted to less than $500 per farm on 95 percent of the farms. Only 17 percent of the farm operators in this group did any work off the farm except on an exchange basis, and only 3 percent worked off the farm as many as 50 days during the year.

Sources of Data

Many of the data used in the study reported were supplied by such agencies as the Bureau of the Census, the Agricultural Marketing Service, and the University of Minnesota. Some were obtained by special field surveys. Census data for farms of the specified type and size were available for the study, as were annual crop and livestock estimates for all farms in the area.

Data on farm organization for census years were obtained from census questionnaires for a sample of typical farms. Interpolations between census years were based on official crop and livestock estimates, assessors' reports, and Minnesota farm accounts. Most of the information on production, prices, wage rates, taxes, and land values came from various official sources within the U. S. Department of Agriculture. Reports published by the University of Minnesota and field surveys and reports of the United States Department of Agriculture were the principal sources of information on changes in farm production practices.

LAND USE AND CROP PRODUCTION

The average size of commercial family-operated dairy-hog farms in this area increased from 134 acres in 1930 to 158 in 1959, or approximately 18 percent (appendix table 4). Most of the increase occurred between 1940 and 1959, when the average rate of growth was about an acre a year.

The upward trend in size of farms stems from the consolidation of farm units. When land was added to a farm business, the overall size of the particular farm was frequently increased by 40 acres or more. However, because of the relatively small number of farms that were enlarged in a given year, the average size of all farms increased gradually.

Over the years the acreage used for pasture has expanded relative to the acreage of cropland harvested. The acreage of open pasture increased by about 21 percent from 1930 to 1958, whereas the acreage of cropland harvested increased by only 17 percent. The relative gain in open pasture reflects the upward trend in crop yields and a further shift to livestock farming. The sharp increase in cropland harvested from 1958 to 1959 was due to an increase in the acreage of corn which resulted from the discontinuance of corn allotments. Land was shifted from soybeans, hay, and pasture to corn.

Crop Acres

Corn, small grains, and hay are the principal crops grown on southeastern Minnesota dairy-hog farms. Although crops like soybeans, flax, sweet corn, and peas are grown as cash crops on some farms, they are relatively unimportant on most dairy-hog farms in the area. They were grown on less than a third of the farms, and acreage per farm in these crops was not large enough to be included as a usual enterprise. Thus, the assumption here is that corn, oats, and hay have been grown on these dairy-hog farms in recent years, and that prior to 1944, barley and wheat were grown also.

Although normally the crop rotation is made up of corn, oats, and hay in that order, farmers in the area find it difficult to adhere to a rigid cropping system. With this rotation, oats can be grown after corn without plowing. They also make a good companion crop for grasses and legumes that are seeded for hay and pasture. The most common hay and pasture mixture used in the rotation is alfalfa, clover, and bromegrass; formerly, it was clover and timothy. In the earlier years, less than one-tenth of the hay acreage was predominantly alfalfa, but in later years, it has increased to more than 50 percent. A good stand is normally kept for about 3 years, the first year or two for hay and the last year or two for pasture. A poor stand is usually replaced by corn or soybeans. Thus the actual sequence of crops harvested from a given field depends to a considerable degree upon circumstances over which the farmer has little control.

From 1930 to 1959, the acreage of corn doubled on these farms. Most of the increase was harvested for grain. There was no definite trend in the acreage of corn cut for silage, but it varied considerably from year to year. In general, the acreage harvested for silage was highest in years when yields were low because of drought and when a substantial acreage of corn failed to ripen because of a late spring or early frost. The acreage of corn includes the relatively small acreage of soybeans grown on dairy-hog farms in recent years.

The acreage of small grains on most dairy-hog farms declined somewhat during the period despite the increase in size of farms. However, the acreage of oats alone increased relative to the total acreage of cropland. The combined acreage of barley and wheat (the early pioneer crops) became progressively less important on these farms after 1938. By 1944, it had decreased to less than an average of 4 acres per farm. Since then, barley and wheat have not been grown on most dairy-hog farms in this area. The acreage of oats for 1944 and subsequent years includes the acreage of all other small grains seeded on dairy-hog farms.

The combined acreage of hay and grass silage has kept pace with the increase in size of farm, but the percentage cut for silage has increased. In 1954, however, the acreage cut for silage was less than 10 percent of the total.

Crop Yields

The crop-yield index varied considerably from year to year but the trend was rather sharply upward. From 1930-34 to 1955-59, the overall increase in crop yields on these farms amounted to about 70 percent. The yield of corn increased from 33 bushels per acre in 1930-34 to 58 bushels in 1955-59. During the same period, the yield of oats increased from 30 to 47 bushels and the yield of hay from 1.4 to 2.6 tons (appendix tables 5 and 6).

Several factors contributed to the general increase in crop yields. Among the more important were the increased use of fertilizer, the development of improved plant and seed varieties through selective breeding, and the discovery of new and better methods of controlling weeds and insects. Hybrid seed corn, which became available for commercial use in the early thirties, was about the only kind of seed corn used on these farms after 1945 (fig. 4). The increased use of lime helped to raise yields of hay and other crops by providing a more suitable

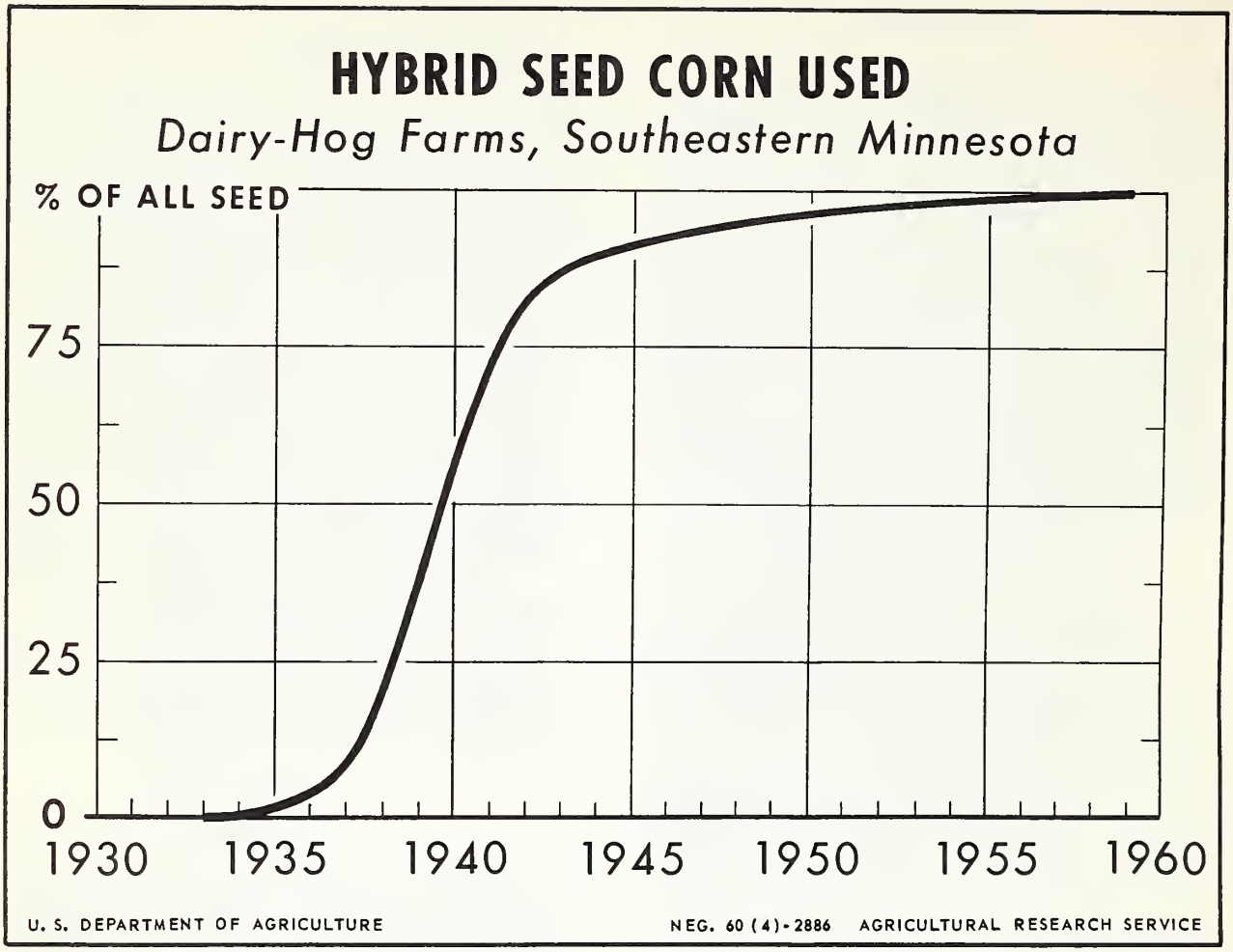

Figure 4

environment for alfalfa and other legumes which, with the help of certain nitrogen-fixing bacteria, are able to take nitrogen from the air and make it available for plant growth.

The use of commercial fertilizer partly coincided with, but generally followed, adoption of hybrid seed corn in southeastern Minnesota. In terms of major plant nutrients (N, P_2O_5, and K_2O), the quantity of commercial fertilizer used per farm increased from less than 100 pounds in 1940 to more than 1,700 pounds in 1959. Fertilizer was first used on corn and later on small grains, hay, and pasture. In 1954, however, approximately 90 percent of the nitrogen and 80 percent of the phosphorus and potassium were still applied to corn.

The use of agricultural limestone increased from less than a ton per farm in 1940 to about 9 tons in 1959. The increases throughout the entire period were about the same as those for commercial fertilizer nutrients but generally preceded them. Some of the increases and year-to-year fluctuations in the use of lime were due to changes in the agricultural conservation programs, but a large part of the general increase may be attributed to better farming practices.

Crop Production

Crop production (excluding pasture) on typical dairy-hog farms in terms of total digestible nutrients doubled from

1930-34 to 1954-59. The increase reflects the growth in size of farms, the gain in crop yields, and the shift to more intensive and higher yielding crops. Production of corn for grain more than tripled, while production of small grains increased by only a third and that of hay and silage (in terms of hay equivalent) by about 80 percent. Of the year-to-year changes in production resulting from changes in yields and acreages, yields accounted for almost two-thirds of the changes in corn production and for three-fourths of the changes in production of small grains and hay. Changes in acreage of corn had their greatest influence on total production in the early World War II years.

LIVESTOCK AND POULTRY ENTERPRISES

Livestock and Poultry Numbers

Between 1930 and 1959, total grain-consuming animal units increased more than 20 percent; they were predominantly dairy cattle and hogs supplemented by small laying flocks with replacements and a diminishing number of horses (appendix table 7). During this period, the expanding dairy enterprise was able to use the feed and shelter formerly used by horses. Dairy cow numbers increased about 50 percent, and in 1959, about 20 dairy cows plus other cattle (predominantly heifers and calves) comprised two-thirds of all animal units (fig. 5).

These larger dairy enterprises came into being during a period when the total number of cows in the United States and in Minnesota were declining because some dairy farmers were either shifting to other livestock and crop enterprises or discontinuing their farm operations. Farms have become more specialized because of changes in technology that may benefit one enterprise more than another. Most of these farmers chose to expand the dairy enterprise. Higher roughage yields and the use of hay balers and forage harvesters made it easier to harvest more hay and roughage. At the same time, aggregate demand increased because of population increases. With an overall increase in demand for milk, these farmers received a higher real price for the same quantity of milk. Thus they were able to increase milk cow numbers, feed more grain per cow, or both, and to substitute more of the higher protein purchased feeds for homegrown grains.

Numbers of milk cow replacements (heifers a year old and older) followed the general trend in numbers of milk cows but since 1935, replacements in general increased at a faster rate. A larger percentage of the calf crop was raised to build up milk cow numbers and at the same time allow for closer culling of milk cows (appendix tables 7 and 8).

Hog numbers have fluctuated more than dairy cow numbers but from 1930 to 1959 on the average, they increased much less (appendix table 9). On these farms, most short-run adjustments in livestock numbers (because of changes in relative prices of grain and livestock or livestock products) were made in the hog enterprise. Normally, the hog enterprise could be expanded or contracted with less difficulty and in a shorter period of time than could the dairy enterprise. The number of pigs saved per litter has increased roughly from 6 to 7 while death loss as a percentage of pigs saved showed no apparent trend throughout the period.

Numbers of horses decreased almost 90 percent throughout the 30-year period, with the largest decreases occurring after World War II. In the earlier years, horses were replaced by tractors for such jobs as plowing and disk harrowing. As late as 1950, horses were still used on many farms for the less menial tasks, such as hauling manure, mowing grass, planting corn, and cultivating. Since then, they have become unimportant as a source of farm power or as users of feed supplies.

The number of hens and pullets increased almost 80 percent on these farms from 1930 to 1944, with most of the increase occurring during World War II. Since then, poultry numbers have decreased, but most farmers have continued to maintain small flocks (about 150 layers as of January 1). About 200 baby chicks

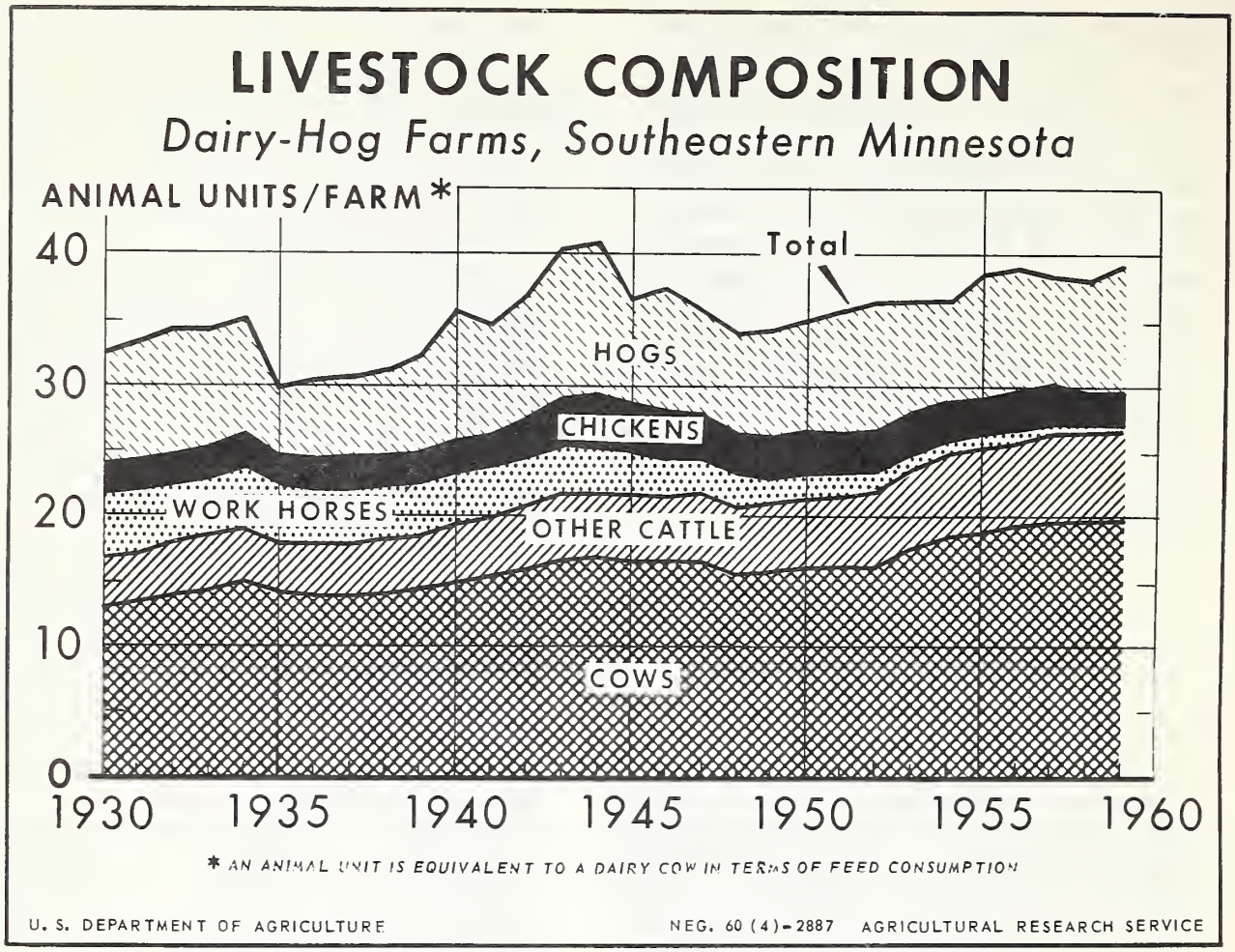

Figure 5

are bought annually to maintain the laying flock. In many instances, the housewife is responsible for most chores of the poultry enterprise, and she uses the money derived from the sale of eggs for the purchase of household items.

Feed Fed to Livestock

Total feed concentrates fed to all livestock on these dairy-hog farms increased from about 37 tons in 1930-33 to about 58 tons in 1956-59, and hay equivalents (pounds of hay plus a one-third portion of silage) increased from 54 to about 98 tons (appendix table 10). The amount of feed fed was approximately equal to production throughout the entire period, but in later years, more homegrown grains were sold and more commercial feeds were purchased.

Purchases of commercial feeds increased from 5,800 pounds per farm (about 8 percent of all concentrates fed) in 1930-33 to about 18,000 pounds (16 percent of the total) in 1956-59. The largest increase in the proportion of purchased commercial feeds relative to homegrown feeds for dairy cows and hogs occurred during World War II, when milk-feed and hog-feed price ratios were favorable.

In the earlier years, purchased feeds were primarily such byproduct feeds as bran, linseed oilmeal, soybean oilmeal, cottonseed meal, bonemeal, and tankage, which were mixed and ground with the farmers' own corn, oats, and wheat.

After 1940, purchased feeds varied considerably with the type of livestock enterprise.

In later years, feed for dairy cows was prepared from commercially mixed protein supplements containing 16, 24, or even 33 percent protein. Most farmers sold some corn and then bought dairy supplements to be mixed with their own corn and oats at home, at the elevator, or at the feed mill. Some bought the supplements and mixed them with their own grains. Many others took their feed grains (corn and oats) to the elevator and traded them for commercially prepared dairy rations. In essence, they were paying for the grinding, the protein and the mineral supplements, plus a handling charge.

Feed for young cattle and hogs was made up essentially of homegrown grains mixed with purchased supplements having a high-protein content. The protein content of the mixed feed fed to young cattle is usually less than that fed to dairy cows, but that fed to hogs is usually higher, especially during the last 60 days of feeding.

For poultry, the change in feeding practices has been mainly one of using proportionately larger and larger quantities of formula feeds, until now more than half the feed fed as mash is of this type. Some producers use all-mash feeds, but this method of feeding is not popular on these farms because of the relatively small poultry enterprises and the home-produced grains. Scratch grains are normally prepared from homegrown grains.

Quantities of concentrates and roughages fed to the various kinds of livestock increased generally from 1930 to 1959 (appendix tables 10 and 11). These increases represent larger numbers and for all livestock except hogs and horses, they represent higher unit feeding rates.

The amount of concentrates fed to cows per hundredweight of milk produced varied between 20 and 30 pounds in all except 2 years; it was estimated to be about 10 percent higher than the State average throughout the period of study. These feeding rates were usually less than on northeastern dairy and Corn Belt hog-dairy farms but averaged about the same as on dairy farms in eastern and western Wisconsin.

The amount of grain fed to hogs varied between 200 pounds per hundredweight of hogs produced in 1934, a drought year during the depression, to more than 500 pounds in 1943, a World War II year. Lower levels of feeding concentrates in the earlier period were due to the large quantities (between 400 and 500 pounds) of skim milk fed per hundredweight of hogs produced. The feeding of skim milk was important until the early years of World War II but declined rapidly during the closing years of the war (when milk subsidies were paid) and for several years thereafter. During the entire period, concentrates fed per head were considerably higher for the larger hogs, but apparently the feeding to different market weights was not closely related to the corn-hog price ratio.

The amount of concentrates fed per horse decreased because of the continuing downward trend in number of hours of work and the easier type of work for which horses were used. In the earlier years, tractors replaced horses for only the hardest work, for example, plowing. By 1959, very little farmwork was done by horses. Thus, the amount of feed consumed by horses was only slightly above the maintenance requirement, and much of it came from hay and pasture.

Milk Production

Total milk production per farm more than doubled from 1930 to 1959. It rose from 8,000 gallons in 1930 to above 18,000 gallons in 1959. It increased from the preceding year in 24 of the 29 years studied. Decreases occurred in the mid-thirties and again immediately after World War II (appendix table 12).

Milk production on these farms increased somewhat more percentagewise than production of feed supplies. In addition, milk production was down somewhat in 1934, when quantities of homegrown feeds produced were cut sharply. Thus, the relation between milk production and feed production, in terms of total

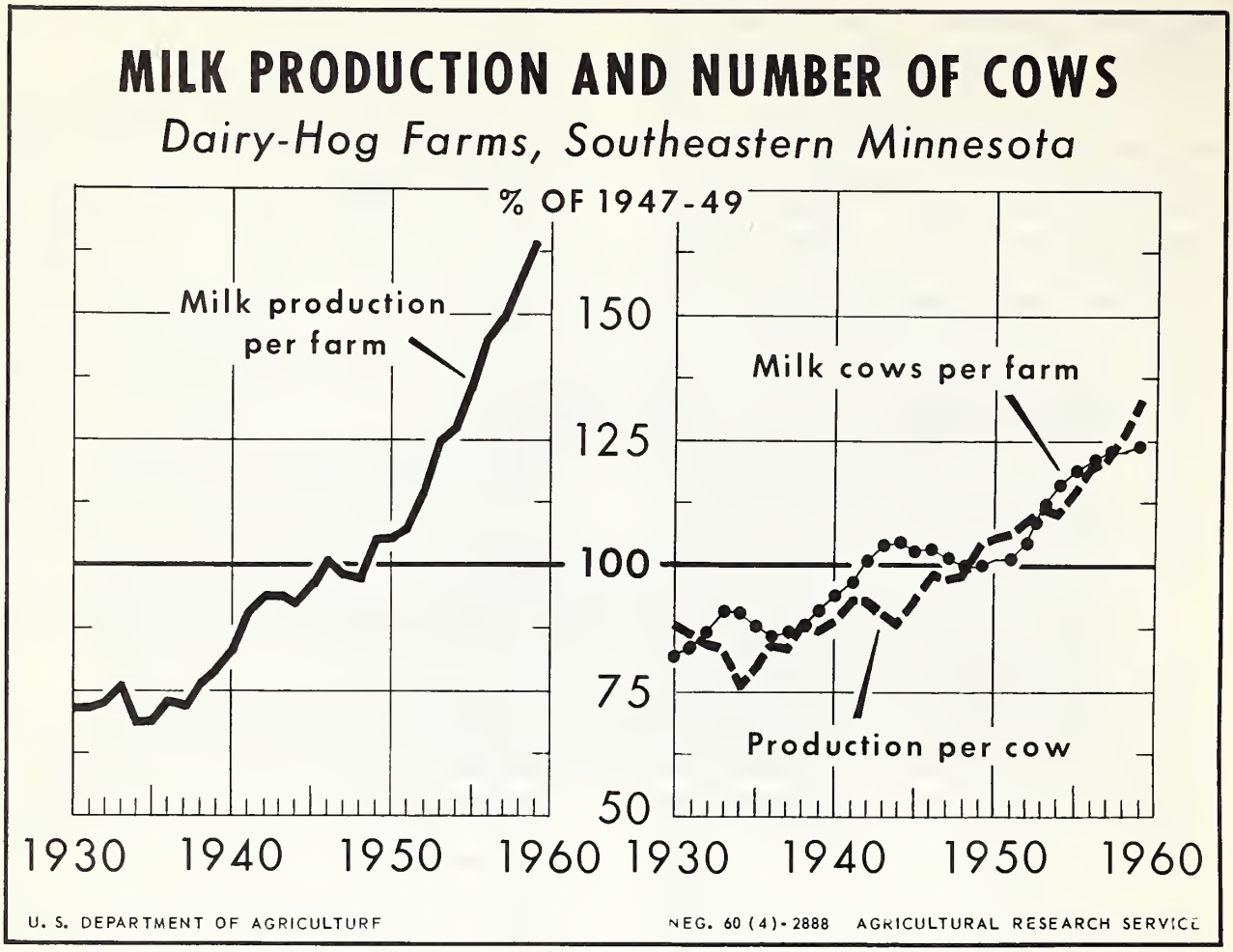

Figure 6

digestible nutrients, on these farms was close from 1930 to 1958.[2]

Cow numbers and milk production per cow (the factors that influence total milk production) have often changed in opposite directions, but during the period of study, both increased more than 40 percent (fig. 6). When cow numbers were at their cyclical peaks, production per cow was relatively low. Many of these dairymen culled few cows during periods of general herd expansion or when feed was plentiful. They also changed their culling rates with changes in the relative prices of beef and milk.

From 1930 to 1959, milk production per cow increased faster than would normally be expected from the higher feeding rates. The rapid rate of increase resulted from changes in the inherent characteristics of the cows and in quality of feed concentrates. Because of better breeding and management practices, cows of later years differed in productive capability from those of earlier years. In addition, in the later years, feeds contained more protein, minerals, and other feed additives.

[2]About 90 percent of the variation in milk production per farm can be explained by the variation in total digestible nutrients produced. On the average, for each increase of 1,000 pounds of T.D.N. produced per farm, milk production increased about 545 pounds. From the production of T.D.N. on these dairy-hog farms, estimates of milk production would be expected to be plus or minus 94 hundredweight in about two-thirds of the years studied.

Year-to-year changes in milk production per cow had their greatest effect on total milk production in 1934-38 and 1944-50. Changes in cow numbers influenced total production greatly during the early thirties (when numbers increased and production per cow dropped), during the World War II years of 1939-43, and immediately following the Korean Conflict years, 1952-54.

Hog Production

Despite violent year-to-year fluctuations, total production of hogs per farm increased about 45 percent from 1930-34 to 1955-59. The fluctuations and general increases stemmed from changes in the number of hogs sold and in market weights.

Overall increases in hog numbers in the mid-1950's resulted from increases in the number of sows bred for fall farrowing. In the earlier years, only about a fourth of the sows were bred for both spring and fall farrowing but in recent years, this was common practice for more than half the sows. This trend is apparent throughout the hog-producing areas of the Corn Belt. In many of these areas, more than three-fourths of the sows are bred to have two litters per year.

Average market weights of hogs sold on these farms declined from about 220 pounds in 1930 to about 204 pounds in 1933. From 1935 to 1945, they rose gradually from this low level to more than 260 pounds, but by 1956, they had declined to about 240 pounds. Even though market weights varied widely over the years studied, about 80 percent of the year-to-year changes in production per farm were due to changes in the number of hogs marketed.

Between 1930 and 1958, production of hogs was apparently influenced by changes in relative prices of hogs and corn and by changes in corn production per farm during the 1930's. As hog prices declined relative to those of corn, these farmers tended to feed less corn to hogs and to raise fewer pigs to be sold in the following year or two (fig. 7).[3] The general level of corn production influenced greatly the size of the hog enterprise in the earlier years, but during World War II and later years, corn production was greatly expanded on these farms, while in general, hog production increased less, although it fluctuated annually. In later years, with a relatively favorable corn price in relation to hog prices, many farmers elected to sell part or all of their corn to the Commodity Credit Corporation rather than feed it to hogs.

FARM INCOME

Gross Farm Income

The generally higher price level and the expanding size of operations since 1940 helped to boost the gross income of these dairy-hog farmers to about $9,200 in 1959. This was about six times as high as in 1930-34 and about 26 percent higher than in 1947-49. The greatest

[3] The equation $Y = 3067 + 265x$ with a standard error (S_y) of 846 pounds and a correlation coefficient (r) of 0.68 describes the relation for net pork production (adjusted for trend) as a function of the hog-corn price ratio in the preceding year. A 1-bushel change in the amount of corn needed to buy 100 pounds of live hog (a 1-point change in the hog-corn price ratio) brought about a 290-pound change in pork production the following year on these dairy-hog farms. The above equation estimates pork production (adjusted for an upward trend of 82 pounds per year since 1930) on these dairy-hog farms for hog-corn price ratios in the preceding year within 550 pounds in half of the years studied. About 45 percent of the variation in pork production is explained by the variation of the hog-corn price ratio in the preceding year. This was significant at the 1-percent probability level. Variations in hog and milk production did not appear to be associated with variations in the relative prices of hogs and milk in the 2 preceding years.

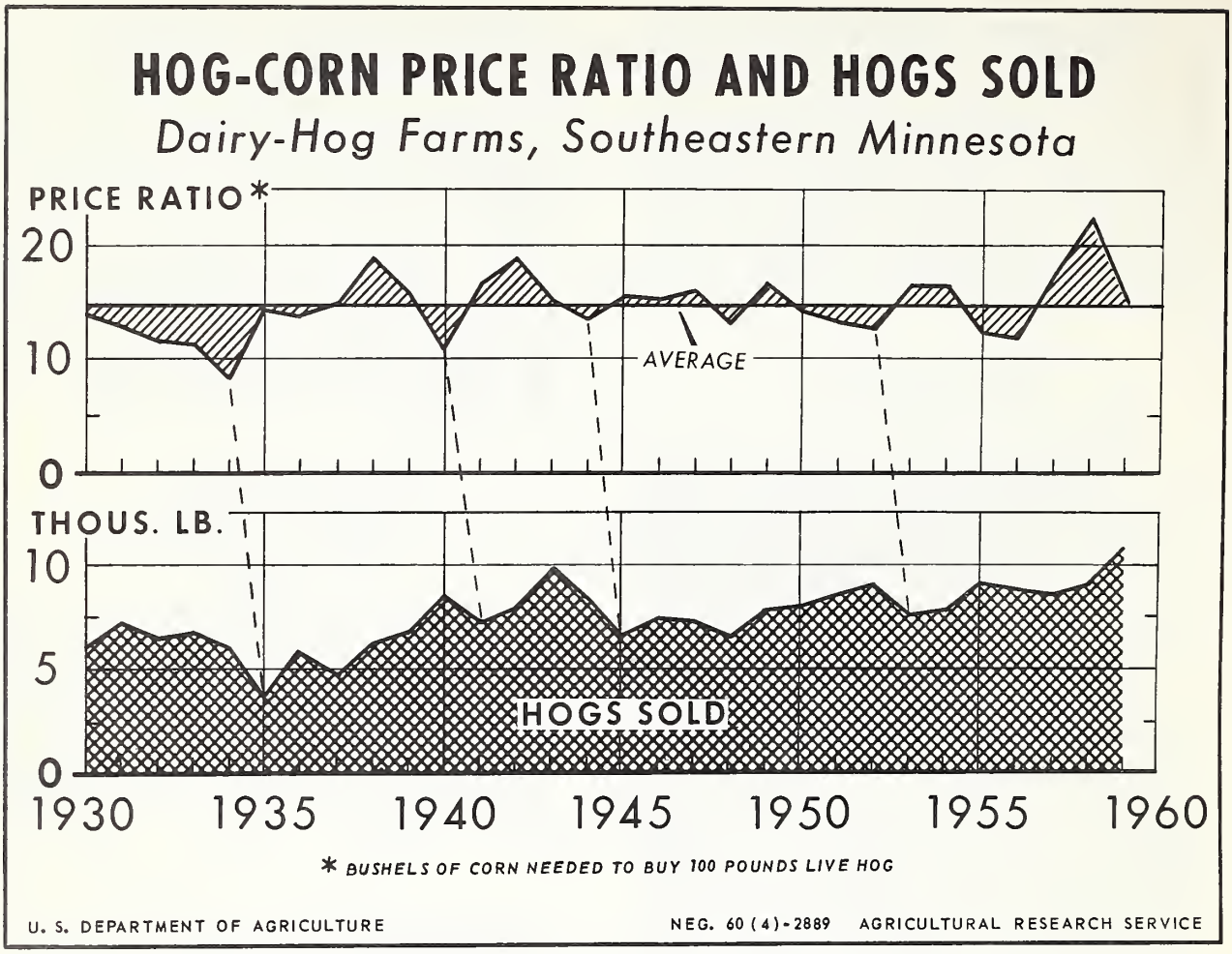

Figure 7

increases occurred during and after the World War II years (fig. 8).

Income from farm operations on these farms was derived chiefly from the dairy and hog enterprises (milk, cattle and calves, hogs), even though cash receipts were derived also from eggs, chickens, corn, and government payments (appendix table 13). This does not include income from off-farm and nonfarm sources. An average of about 78 percent of the gross income (with 29 of the 30 years varying between 68 and 88 percent of the value of products sold, used in the home, or added to inventory) was from the dairy and hog enterprises. Receipts from the dairy enterprise alone accounted for between 50 and 60 percent of the gross income in 27 of the 30 years.

Before 1945, sales of grain by dairy-hog farmers were unimportant. In the earlier years, these farmers usually fed all crops grown and bought relatively small quantities of high-protein feed. Since 1945, the proportion of high-protein feed bought has increased, and these farmers began to sell grain and buy more feed; in effect, they were exchanging quantities of homegrown grain for commercial feed. Grains were sold on the open market, and in later years, some were sold to the Commodity Credit Corporation under the price-support program. Throughout the period, these farmers bought more feed than they sold. From 1945 to 1959, expenditures for feed exceeded crop sales by about $220 per year.

Government payments to these dairy-hog farmers were relatively unimportant. From 1933 to 1944, they averaged about $80 a year and only exceeded $110 per year in 1944-46 when milk subsidies were

paid. After 1946, average payments per farm did not exceed $40 a year until 1956, when soil-bank payments were introduced. The acreage placed in the Soil Bank by these farmers was relatively unimportant. From 1955 to 1958, it averaged only about 1 acre per year.

Changes in gross income depend upon changes in prices and production. In general, price changes were more important than production changes. They accounted for about two-thirds of the year-to-year changes in gross income from 1930 to 1957. After 1951, however, the effect of changes in production on gross income were more pronounced; they accounted for almost half the year-to-year changes in gross income. In recent years, prices received for products sold generally declined, while production of milk and hogs continued to rise.

Total Operating Expense

Operating expenses climbed from about $940 in the depth of the depression (1933-34) to more than $5,350 in 1958-59 (appendix table 14). This fourfold increase was considerably less than the change in gross income during the same period, but in the early thirties, gross income was down much more than operating expenses. Although cash expenditures remained fairly constant from 1951 to 1956, total operating expenses continued to rise. In 1959, they reached a record high. Depreciation charges on machinery and buildings continued to increase as a result of higher replacement costs.

The upward trend of total farm expenses was much less erratic than changes in gross income because prices paid for production goods and services purchased generally fluctuated less than prices received for farm products sold. In addition, changes in crop yields on these farms resulted in higher or lower incomes but affected crop expenses very little.

A large part of the increase in cash expenditures was due to a shift in the pattern of inputs from those of farm to those of nonfarm origin (appendix table 15). The increasingly higher wage rates encouraged the substitution of capital for labor. The newer farm machines and farm supplies became available to farmers at prices that induced the substitution of machines and materials for manpower and horses. This machinery, plus the use of more fertilizer, spray materials and better seed, has increased total costs and costs per unit of production. However, if these farmers had not changed their production practices and operational methods, costs per unit of production would have increased even more. In general, these costs increased less than the index of prices paid for all items used in production because of the increased productivity of land, labor, livestock, and other capital.

During periods of temporary shortages of certain inputs, others were substituted. During World War II, when production of tractors and other farm machinery was limited, these farmers were forced to spend proportionally more for repairs. The cost of keeping tractors and other farm machinery repaired increased to about 14 and 10 percent of their respective inventory values, compared with the normal percentages of 9 and 5, respectively.

Cash expenditures increased partly because farming became more commercialized. For example, farmers bought increasing quantities of feed and seed and sold more corn and oats. These increased expenditures were offset, at least partly, by increased receipts; thus only the service and handling charges were net increases in expenditures.

Operating expenses may be considered as the product of cash inputs and the cost or price per unit of cash inputs. With inputs calculated at 1947-49 prices, the year-to-year changes in prices per unit of cash input from 1930 to 1957 were responsible for almost 70 percent of the changes in operating expenses. The effect of more cash inputs on total operating expenses was most pronounced after 1950. During this period, year-to-year changes

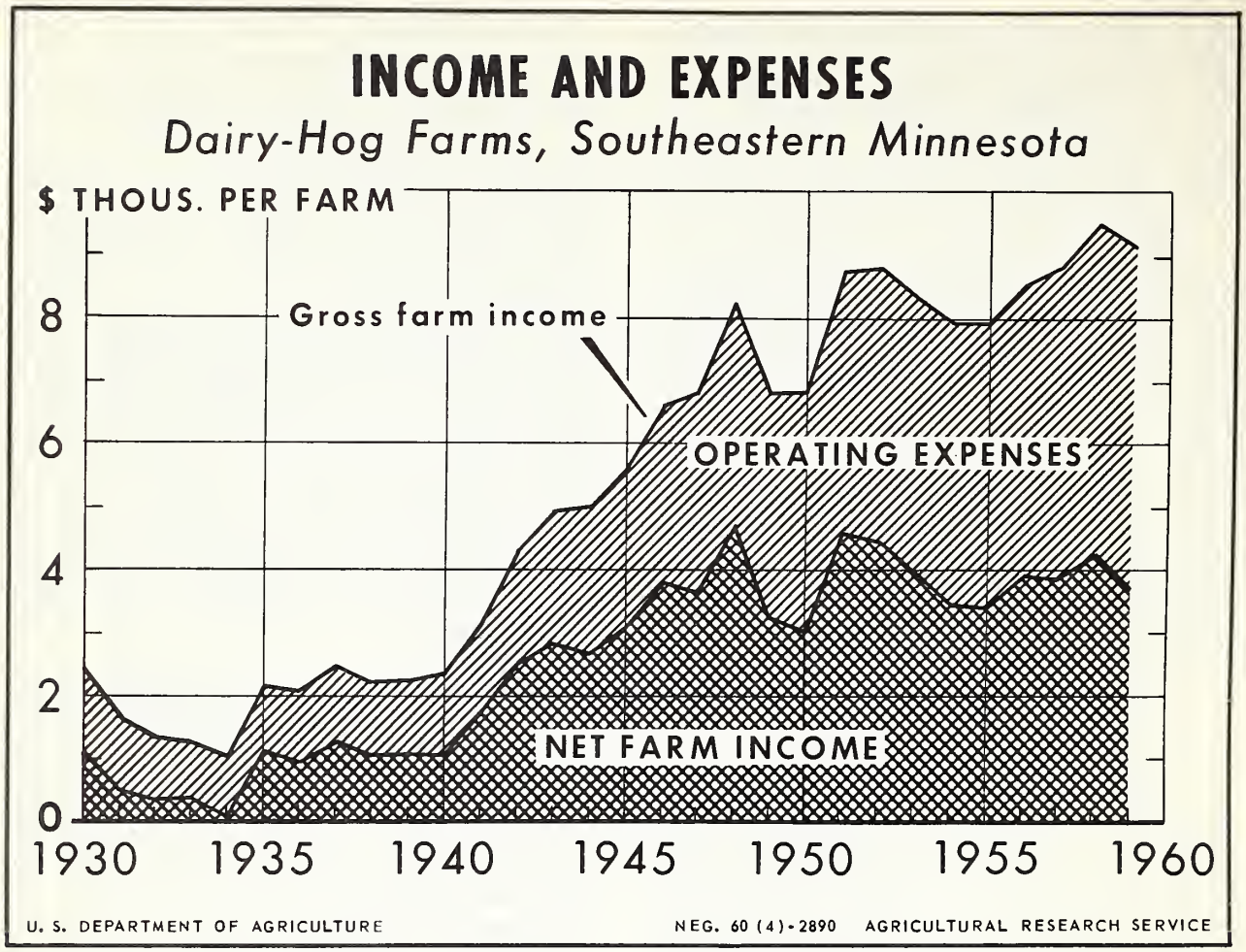

Figure 8

in inputs affected operating expenses more than did price per unit of input.

Net Farm Income

Net farm income (the return to capital and unpaid labor and management) per farm averaged $3,944 annually on these dairy-hog farms in 1956-59 in contrast to about $1,200 in 1937-41 and $584 in 1930-33. Thus the net return in 1956-59 was nearly seven times that of 1930-33. The preliminary estimate of about $3,700 for 1959 compares with a 30-year high of $4,691 in 1948 and a low of $49 in 1934 (appendix table 14). Changes in net farm income have followed the general pattern of gross farm income but at relatively lower levels since the early years of World War II.

Changes in prices of milk and hogs on these farms greatly influenced net farm incomes. At the given prices from 1953 to 1958 for milk and hogs, and at the level of production and net farm incomes that prevailed during these years, small percentage changes in milk prices resulted in about the same percentage change in net farm income. Similar changes in hog prices resulted in only about four-tenths as much change in net farm income. From 1937 to 1947, net incomes were somewhat less responsive to changes in milk prices and more responsive to changes in hog prices than in 1953-58. Throughout the period 1930-58, a given percentage change in hog prices had about

half as much effect on net farm income on these farms as the same percentage change in milk prices.[4]

Because both prices and production of milk were fairly stable, these farmers enjoyed relatively steady incomes compared with operators of many other types of commercial family-operated farms in the United States (table 1).

Even though, because of the hog enterprise, yearly incomes on these dairy-hog farms were more variable than those on the strictly dairy farms, they were much less variable than the incomes on wheat farms and cattle ranches to the south and west. In addition, these farmers received payments for milk at regular intervals (monthly or semimonthly) throughout the year, whereas cash grain farmers, cattle feeders, and livestock ranchers received most of their income in one month or one season of the year.

FARM CAPITAL

The total value of farm capital (all physical assets) per farm on these dairy-hog farms was more than $45,000 in 1959, compared with about $17,000 in 1930 and less than $10,000 in 1933 (appendix table 16). In general, the value of land as a percentage of total assets declined between 1930 and 1949, but in recent years, it has leveled off and is now increasing (fig. 9). Investments in machinery and equipment increased relative to other assets, but in 1959, they still represented less than one-fifth of the total investment.

Most of the actual change in total farm capital resulted from changes in the value of real estate. The value of land and buildings (including dwellings) more than tripled from 1933 to 1957, chiefly because of price changes. From $96 an acre in 1930, the estimated value of land and buildings for these farms dropped to about $57 an acre in 1933 and remained below the 1930 mark until about 1948. By 1959, it had risen to almost $180 per acre, 87 percent above the 1930 level.

The increase in value of real estate was due partly to the investment of additional capital and labor in buildings and other improvements. Cash expenditures on service buildings and fences alone exceeded the depreciation of such items by about $1,100 per farm over the last 15-year period. Also, many hours of labor were used for clearing land and making other improvements in land and buildings. Electricity was used on only about 14 percent of these farms in 1930 and on 70 percent in 1940, but in 1954, it was used on nearly all farms. Water systems were installed on many of the farms during the period, so that by 1954, almost 80 percent of these farmers had such systems.

Larger farms contributed also to the rise in real estate values per farm. In terms of acres, these family-operated dairy-hog farms were about 18 percent larger in 1959 than in 1930. They increased in size as technological advances reduced labor requirements per unit of farm output.

The value of farm machinery and equipment rose from $1,100 per farm in 1930 to almost $7,000 in 1959. Slightly more than half of this rise was due to

[4] Partly because net farm income was closely associated with the price of milk (almost 95 percent of the variation in income for these farms could be explained by the variation in the price of milk), incomes could be estimated fairly satisfactorily by considering only the price received for milk (net income = -936 + 1522 x milk price). Estimates of incomes for these dairy-hog farms would be expected to be plus or minus $345 during two-thirds of the time for the 29 years studied. From 1930 to 1958, net incomes increased about $152 for each increase of 10 cents in the price of milk. The above standard error of estimate would be reduced more than a third by having net farm income as a function of milk prices, corn yields, and the corn-hog price ratio [Net farm income = -2554 + 1288 (milk price) + 29 (corn yield) + 51 (corn-hog price ratio)]

Table 1. —Net farm income and related data per farm in 1955-59 and the level and relative variation of net farm income during 1930-59 and 1945-59, specified types of commercial family-operated farms

Type of farm and location	1955-59			Variation of net farm income 1/	
	Total acres	Total capital	Net farm income	1930-59	1945-59
	Acres	Dollars	Dollars	Percent	Percent
Dairy-hog farms, Southeastern Minn.	155	39,010	3,840	30	13
Dairy farms:					
Central Northeast	212	32,630	4,430	23	11
Eastern Wisconsin	137	35,512	2,564	31	15
Western Wisconsin	166	25,720	3,071	27	18
Corn Belt farms:					
Hog-dairy	165	46,578	5,883	25	15
Hog-beef raising	234	40,632	3,780	58	21
Hog-beef fattening	206	65,030	7,811	41	24
Cash grain	233	99,352	7,306	35	18
Tobacco farms:					
Tobacco-livestock, Kentucky	117	25,956	3,095	23	12
Tobacco-cotton, North Carolina	100	22,610	3,125	2/	16
Large tobacco-cotton	170	39,942	4,020	2/	18
Small tobacco	50	11,354	2,557	2/	14
Cotton farms:					
Southern Piedmont	181	17,688	1,915	27	14
Black Prairie, Texas	182	30,286	2,172	36	28
High Plains, Texas (nonirrigated)	393	48,472	5,315	2/	56
High Plains, Texas (irrigated)	342	95,996	12,331	2/	28
Delta, Small	58	12,092	1,827	2/	12
Delta, Large-scale	1,000	183,872	21,996	2/	27
Peanut-cotton farms, Southern Coastal Plains	156	12,300	2,806	2/	15
Spring wheat farms, Northern Plains:					
Wheat-small grain-livestock	700	43,594	5,244	53	32
Wheat-corn-livestock	497	45,188	4,119	60	35
Wheat-roughage-livestock	788	41,126	3,619	66	30
Winter wheat farms:					
Wheat, Southern Plains	726	80,870	7,508	59	40
Wheat-grain sorghum, Southern Plains	732	78,272	5,876	77	57
Wheat-pea, Washington and Idaho	551	161,566	12,876	2/	23
Wheat-fallow, Washington and Oregon	1,331	125,274	10,817	44	24
Northern Plain ranches:					
Sheep	6,268	88,846	8,607	56	49
Cattle	4,236	72,482	4,143	63	38
Cattle ranches, Intermountain Region	1,715	71,798	8,865	45	41
Southwestern ranches:					
Sheep	13,147	186,392	6,444	2/	67
Cattle	10,896	137,528	5,339	2/	73
Poultry farms, New Jersey (egg producing)	10	48,720	1,775	2/	78

1/ Standard error of the regression line expressed as a percentage of the mean.
2/ Data not available.

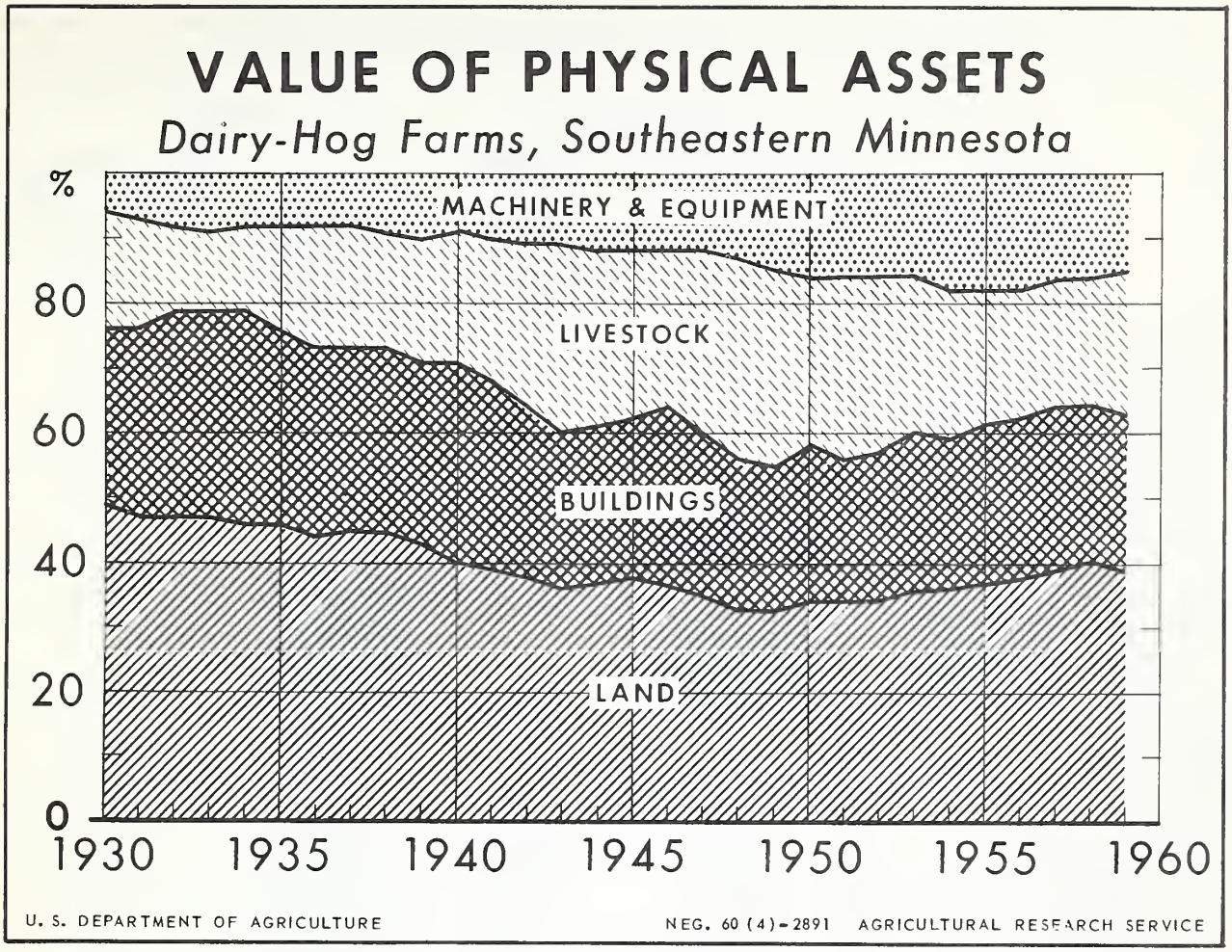

Figure 9

price increases. The quantity (value in constant dollars) of machinery and equipment in 1959 was almost three times the quantity in 1934-36.

The increase in quantity of machinery reflected among other things the shift from horses to tractors as the major source of farm power. In 1930, the number of tractors per 100 farms was 38; in 1955, it was 170. Numbers of machines on these farms in 1955 are shown in table 2.

It is generally recognized that year-to-year changes in purchases of machinery vary with the previous year's income and with expected income. Purchases of any single machine vary with the state of innovation related to that particular phase of farming. For example, pickup hay balers and field choppers, which are relatively new, were purchased in 1954 at faster rates than those at which they were depreciating (table 2). But corn binders, grain binders, and threshers (recently outdated) were depreciating much faster than they were being replaced.

So far as they mean larger quantities of land, buildings, feed, livestock, and machinery, larger total investments had diverse effects on the labor needed to operate these farms. The use of more machinery made it possible to do more work with the same labor force or to do the same work with a smaller labor force, or both. In general, farmers first bought labor-saving machines, then began to farm more land, milk more cows, and gradually reduce the amount of hired labor. The combined effect of the smaller labor force and the changes in dollar investment, plus the larger quantities of

Table 2.—Inventory of farm machinery and equipment June 1, 1955, purchases in 1954, and related data, commercial family-operated dairy-hog farms, southeastern Minnesota[1/]

Item	Number of machines per 100 farms		New machines bought in 1954	
	In inventory June 1, 1955	Bought new in 1954	Cost per machine	As a percentage of all machines in inventory
	Number	Number	Dollars	Percent
Tractors	170	13.4	2,650	7.9
Trucks	61	.7	1,700	1.1
Automobiles	100	7.0	2,230	7.0
Tractor plows	131	7.7	290	5.9
Corn planters	87	7.0	400	8.0
Tractor cultivators	119	4.2	330	3.5
Cornpickers	48	4.9	1,530	10.2
Combines	33	4.2	2,230	12.7
Field choppers	15	2.8	1,720	18.7
Hay balers	28	7.7	1,820	27.5
Milk coolers:				
Bulk	1	---	---	---
Can	37	---	---	---
Disk harrow	94	2.8	370	3.0
Spike-tooth harrow	90	1.4	120	1.6
Springtooth harrow	71	3.5	310	4.9
Blowers	15	.7	600	4.7
Tractor mowers	70	4.2	310	6.0
Side rakes	89	4.2	350	4.7
Corn binders	47	---	---	---
Grain drills	78	.7	600	.9
Seeders	11	.7	40	6.4
Threshers	10	---	---	---
Grain binders	56	---	---	---
Lime spreaders	18	.7	600	3.9
Rotary hoes	10	.7	380	7.0
Ensilage cutters	16	---	---	---
Manure spreaders	99	6.3	450	6.4
Manure loaders	43	2.8	350	6.5
Milking machines	2/ 90	2.8	130	3.1
Tractor sprayers	12	.7	120	5.8
Portable elevators	57	4.9	550	8.6
Barn cleaners	7	.7	1,280	10.0
Wagon on rubber	161	2.1	240	1.3
Electric motors	193	---	---	---
Chain saws	13	---	---	---
Feed grinders	49	1.4	320	2.9
Fence controllers	96	---	---	---

1/ Based on a sample of 142 farms.

2/ Percentage of farms having milking machines.

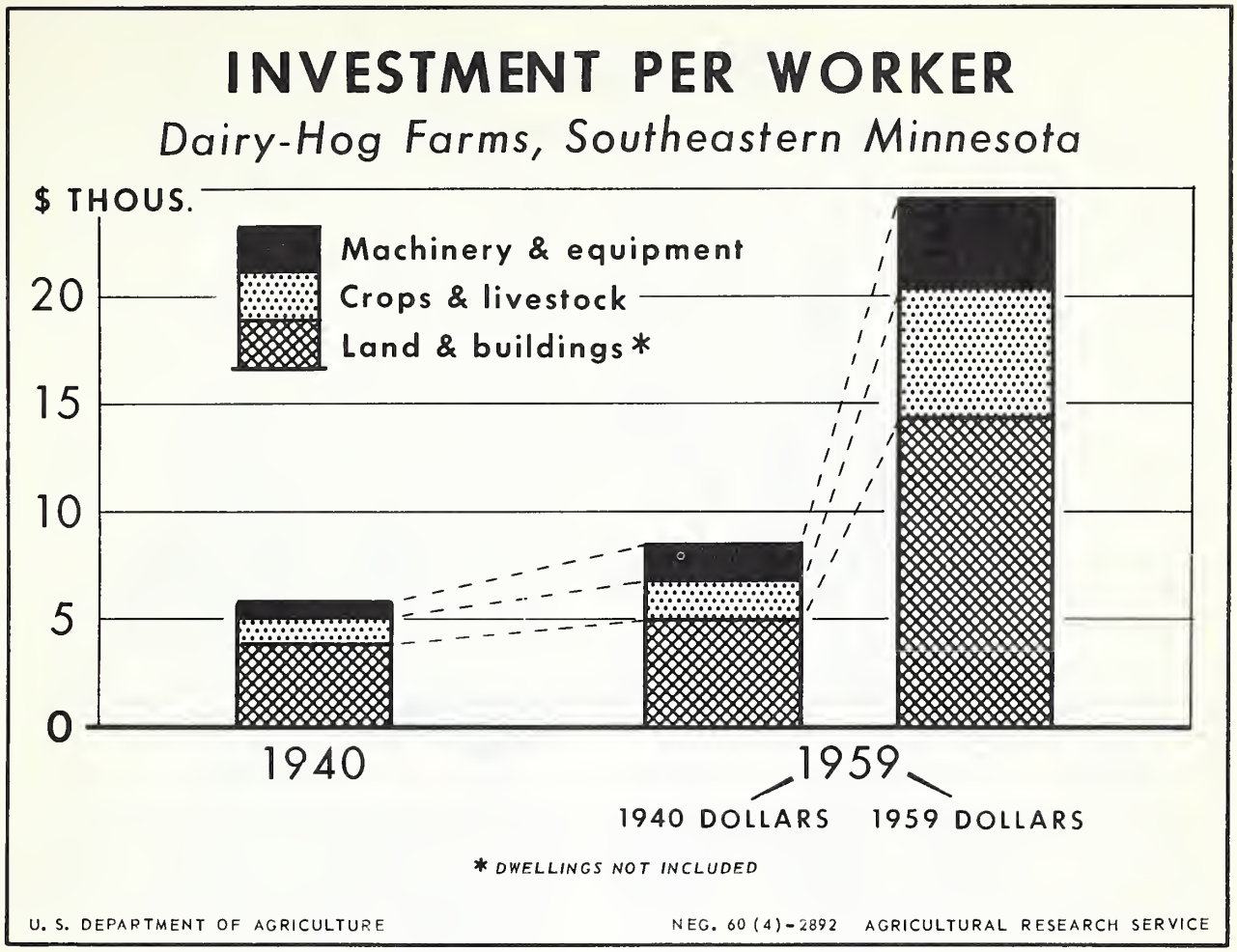

Figure 10

land, buildings, livestock, machinery and feed, is shown in figure 10. Physical quantities (value of capital in constant dollars) invested per worker increased about 48 percent from 1940 to 1959, while the current value invested per worker more than tripled.

FARM PRICES

Prices Received for Products Sold

In general, prices received for products sold decreased sharply during the depression of the 1930's, increased slightly during the late thirties, and increased sharply during and immediately after World War II. They reached a peak in 1948, but by 1950, they had declined to the level prevailing immediately after World War II. The index of prices received, the prices of which are weighted by quantities sold, on dairy-hog farms was heavily influenced by the prices of milk and hogs. The larger quantities of milk sold relative to hogs had a stabilizing influence on fluctuations of hog prices around the general price level (fig. 11).

Prices received by these farmers for milk varied from a low of $0.87 per hundredweight in 1933 to a high of $3.75 in 1948. Part of the change in the overall price of milk reflects the gradual shift from sales of cream to sales of fluid milk. In the early thirties, whole milk accounted for less than 20 percent of the milk equivalent sold, but in 1950, it accounted for about 80 percent. During World War II, the government paid a subsidy for milk to

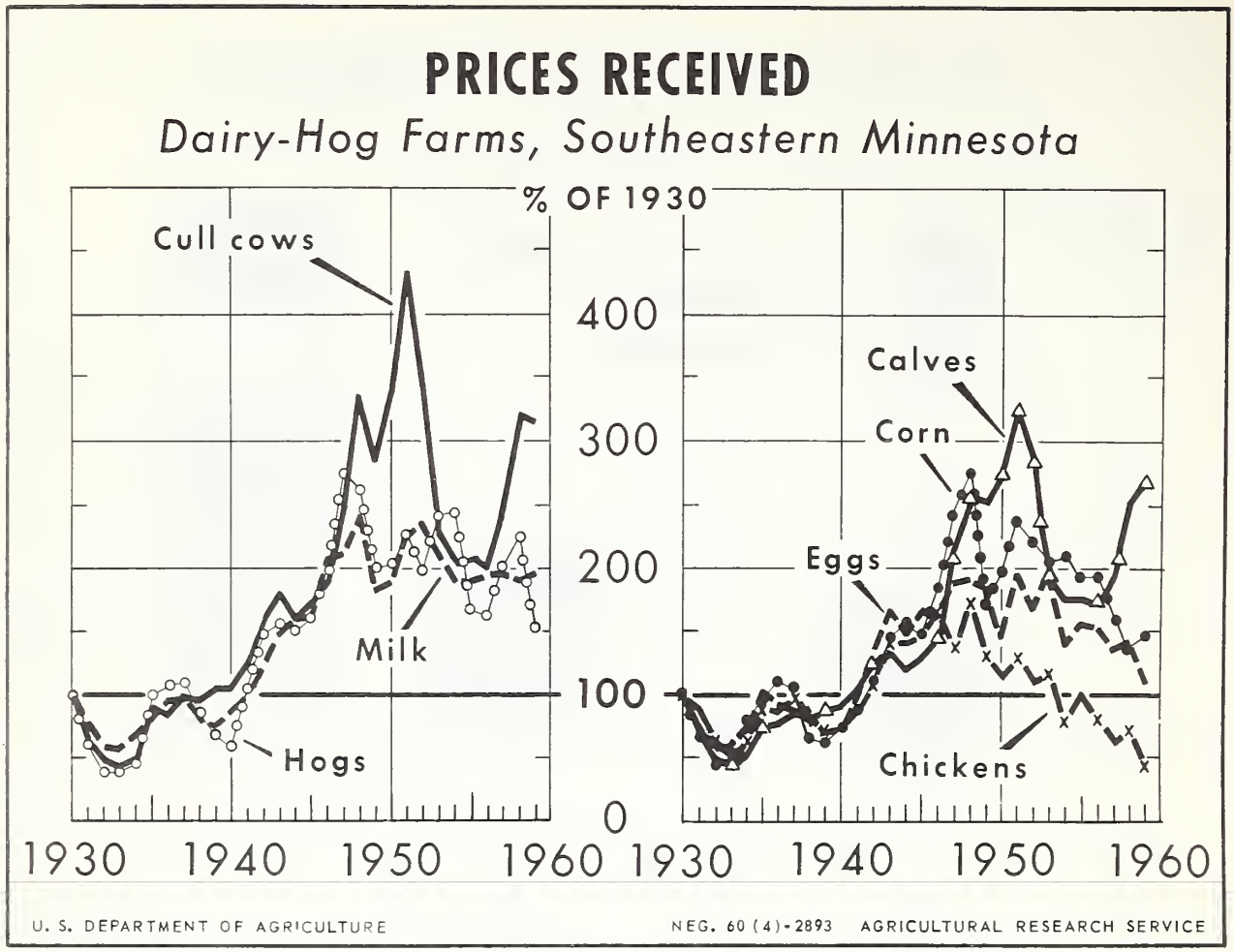

Figure 11

encourage greater production. The value of the subsidy and the proportion of the total yearly production subsidized was as follows:

In general, from 1930 to 1948, prices received for cattle increased about the same as prices of milk and hogs. Between 1948 and 1953, cattle prices were

Year	Subsidies per hundredweight of milk equivalent		Proportion of milk and cream on which subsidies were paid		Average value added to composite milk equivalent price for all milk sold
	Milk	Cream	Milk	Cream	
	Dollars	Dollars	Percent	Percent	Dollars
1943 -----	0.30	0.14	21	15	0.05
1944 -----	.45	.26	100	89	.39
1945 -----	.47	.46	100	96	.46
1946 -----	.56	.59	53	59	.31

Milk and cream subsidies were paid to these farmers for only 3 months in 1943 and for only 6 months in 1946.

relatively high, but after 1953, they returned to the general level of prices received for all products sold. Variations in prices of cull milk cows generally fluctuated with beef cattle prices. Thus in general, relative price changes were associated with changes in numbers of cattle in the United States and to some extent with hog prices. Hog prices have usually fluctuated around the general price level because of changes in numbers marketed (reflecting changes in the corn-hog price ratio) and changes in the price of beef.

Prices of eggs and poultry have shown less upward trend than those of most other products sold by dairy-hog operators and have fluctuated even more widely than pork prices. Because of the small quantities sold by these farmers, however, these prices have had relatively little effect on changes in income and the overall index of prices received.

Prices Paid for Production Goods and Services

The index of prices paid for goods and services used in production including taxes and wages paid to hired labor decreased by a third from 1930 to 1933, but by 1941, it had regained its 1930 position. From 1941 to 1952, it increased by more than 7 percent per year and from 1952 to 1959, by only about 6 percent more. At the end of the period, the index was 25 percent above its 1947-49 level and about 130 percent above the 1930 level.[5]

Changes in the prices paid for individual items used in production varied in degree and direction (fig. 12). Prices of production-increasing soil additives changed relatively little. The price of fertilizer in terms of plant nutrients was slightly lower in 1958 than in 1930, but the price paid by these dairy-hog farmers for lime was 50 percent higher. Increases in prices of machinery, gasoline, and mixed feeds were relatively small when compared with hired wage rates. A steady reduction in the price of electricity since 1930 made it a relatively cheap source of power.

Prices paid for seed varied considerably from year to year and within relatively short periods of time. In general, seed prices in 1956 were more than twice as high as in 1930-31 and about three times as high as in 1933-34. However, from 1956 to 1959, prices of alfalfa seed averaged only slightly higher than in 1930-31. With improved soils and new varieties, alfalfa seed was much more readily grown and seedings continued to be productive for longer periods. The increased demand resulted in overproduction in some specialized areas. In 1952, the price of alfalfa seed was twice as high as in 1930, but by 1956, it had dropped below the average price in 1930.

The divergent movement of prices paid for production goods and services encouraged changes in the pattern of expenditures toward the use of less labor and more capital for production, even though tax rates on capital items had doubled since 1930. Most of the increase in tax rates occurred after 1946; from 1946 to 1959, real estate taxes increased on the average about 9 percent per year.

ALLOCATION OF NET FARM INCOME

As a basis for comparing the operations of different types and sizes of farms, net farm income was allocated to farm capital and to the operator and his family for labor and management. Allowances were made for farms running larger in some areas than in others in terms of both total capital and hours of unpaid

[5] Changes in this index are intended to show the total effect of changes in the prices of individual purchased commodities weighted by quantities bought. The effects of changes in quality on price are often difficult to isolate from actual price changes. For example, the addition of antibiotics (with no other changes) to protein supplement increases the price of a hundredweight of 40-percent hog supplement. The higher price is due partly to the higher costs of the antibiotics but also to the addition of more feed units. Biases tend to be in the direction of overestimating the effect of price and underestimating that of increases in the quantity of goods used in production.

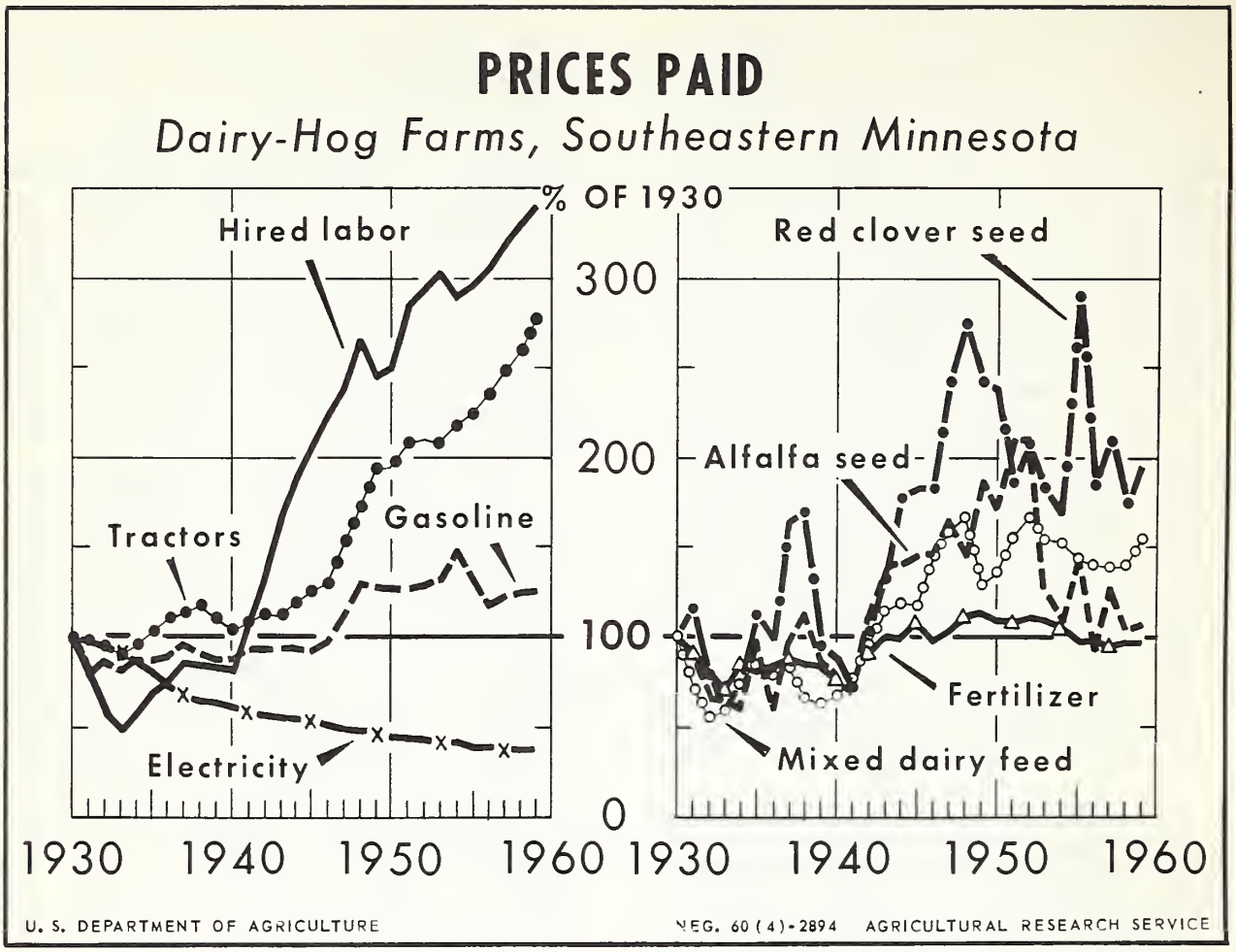

Figure 12

labor used. Inputs of operator and family labor were relatively small on some farms where inputs of capital were large and vice versa. For example, on typical wheat-pea farms in Washington and Idaho, the value of farm assets is four times as great as on dairy-hog farms in southeastern Minnesota but about 10 percent fewer hours of family and operator labor are used annually on the wheat-pea farms. After deducting a charge for capital, annual returns to dairy-hog farmers for farm operations in 1955-59 averaged about $2,026, or slightly higher than the median returns for some specified types of commercial family-operated farms (table 3). However, because of the relatively larger quantities of family labor used, the return per hour of labor on dairy-hog farms ($0.56) was $0.11 below the median return for the 32 selected types of farms.

The portion of net farm income allocated to capital was determined by multiplying the current market value of farm assets (total farm capital) on January 1 by the current interest rate charged by the Federal Land Bank on new real estate loans in the area. This charge for capital approximates an opportunity cost for the money invested in the business rather than the investment actually earned.

The return to the operator and family for labor and management was the part of the net farm income that remained after the capital charge was deducted. Any fluctuations in net farm income are reflected in the return to the operator and family. Thus, an average income figure

Table 3. —Net farm income per dollar invested and returns to the operator and family for labor and management, 1955-59, specified types of commercial family-operated farms 1/

Type of farm and location	Average 1955-59			
	Net farm income per dollar invested	Return to operator and family for labor and management-		
		In current dollars	In 1937-41 dollars	Per hour
	Cents	Dollars	Dollars	Dollars
Dairy-hog farms, Southeastern Minnesota	10	2,026	900	0.56
Dairy farms:				
Central Northeast	14	2,747	1,219	.75
Eastern Wisconsin	7	916	407	.24
Western Wisconsin	12	1,870	827	.48
Corn Belt farms:				
Hog-dairy	13	3,715	1,638	.95
Hog-beef raising	9	1,863	824	.58
Hog-beef fattening	12	4,761	2,092	1.29
Cash grain	7	2,593	1,166	.77
Tobacco farms:				
Tobacco-livestock, Kentucky	12	1,854	823	.67
Tobacco-cotton, North Carolina	14	1,866	832	.70
Large tobacco-cotton	10	1,801	805	.67
Small tobacco	23	1,923	855	.65
Cotton farms:				
Southern Piedmont	11	927	412	.37
Black Prairie, Texas	7	685	303	.31
High Plains, Texas (nonirrigated)	11	2,929	1,278	1.31
High Plains, Texas (irrigated)	13	7,534	3,318	3.07
Delta, small	15	1,233	550	.49
Delta, large-scale	12	12,716	5,685	2/
Peanut-cotton farms, Southern Coastal Plains	23	2,114	939	.73
Spring wheat farms, Northern Plains:				
Wheat-small grain-livestock	12	3,149	1,409	1.25
Wheat-corn-livestock	9	1,965	865	.55
Wheat-roughage-livestock	9	1,650	737	.49
Winter wheat farms:				
Wheat, Southern Plains	9	3,696	1,612	1.59
Wheat-grain sorghum, Southern Plains	7	2,172	926	.64
Wheat-pea, Washington and Idaho	8	5,091	2,260	2.19
Wheat-fallow, Washington and Oregon	9	4,780	2,097	1.70
Northern Plain ranches:				
Sheep	10	4,450	1,949	1.12
Cattle	6	731	321	.02
Cattle ranches, Intermountain Region	12	5,078	2,396	1.37
Southwestern ranches:				
Sheep	3	-2,251	-1,025	-.84
Cattle	4	-1,578	- 724	-.61
Poultry farms, New Jersey (egg-producing)	4	- 731	- 307	-.15

1/ Incomes reported here are those from farm operations only. They do not include gains or losses in capital or income from off-farm and nonfarm sources.
2/ Not applicable.

for several years is more realistic than the income for a single year.

Returns to the operator and family include earnings from farm operations only. Excluded are annual gains or losses from increases or decreases in the prices of fixed and working farm assets because this income is not realized unless farms are sold. Those farmers who bought their farms about 30 years ago and sold them recently have realized capital gains averaging more than $80 per acre.

Capital Charge

The capital charge on dairy-hog farms in southeastern Minnesota decreased from $900 per farm in 1930 to an average of less than $500 per farm from 1936 to 1942 and then increased to a record high of $2,278 in 1958. The increase in the capital charge from 1936 to 1956 ($962 per farm) was due primarily to the rise in value of physical assets, whereas from 1956 to 1958, the increase ($860) was due largely to the 25-percent rise in the interest rate. The interest rate was 5.5 percent from 1930 to 1934, approximately 4.0 percent from 1936 to 1956, and 5.0 percent in 1959.

Returns to Operator, Family Labor, and Management

Returns to the operator and family varied considerably during the period of study. From 1931 through 1934, these returns were not large enough to cover the calculated charge for capital. Between 1935 and 1940, returns for labor and management ranged from $506 to $764 per farm and from 1942 to 1958 from $1,944 to $3,673, with 12 of the 17 years between $1,944 and $2,515 (appendix table 17).

Even though the returns to the operator and family remained at the same general level after 1942, family living expenses continued to increase. During the World War II years, the returns to family labor and management increased faster than the cost of living. In 1946, the purchasing power of the returns to operator and family labor (1937-41 dollars) was at an all-time high (fig. 13). Since then, it has generally declined. These current returns (as a residual) divided by hours of operator and family labor give an estimate of the returns per hour of labor.

Because of the decline in number of hours of operator and family labor, returns per hour increased more percentagewise than did total returns. Approximately 1,000 fewer hours of man labor were used annually to operate these dairy-hog farms in 1955-58 than in 1930-33. Calculated returns per hour of man labor were $0.05 in 1930, $0.18 in 1937-41, $0.68 in 1947-49, and a record high of $0.90 in 1951; but in 1955-58, they had declined to about $0.60 per hour, and in 1959 the preliminary estimate was down to $0.40 per hour.

GROSS PRODUCTION AND INPUTS

Farm Production and Productivity of Resources

Gross production (a measure of size of the farm business) per farm on dairy-hog farms decreased in the early thirties but more than doubled from 1934 to 1959, despite a reduction in number of hours of man labor. This was made possible by using almost three times as much farm machinery, 1,300 pounds more fertilizer nutrients, and improvements in the inherent characteristics of both crops and livestock. This higher production was realized on farms containing about 24 more acres, on which workhorses were replaced by other productive livestock. As motor vehicles (tractors, trucks, and automobiles) were substituted for horses, additional acres of cropland, as well as additional labor, became available for production of more milk and pork. More than 3 acres of land were required to maintain each workhorse in the earlier years.

General increases in crop and livestock production were realized from larger enterprises and more intensive farming practices. In addition, higher productivities of crops and livestock jointly affected total production. During

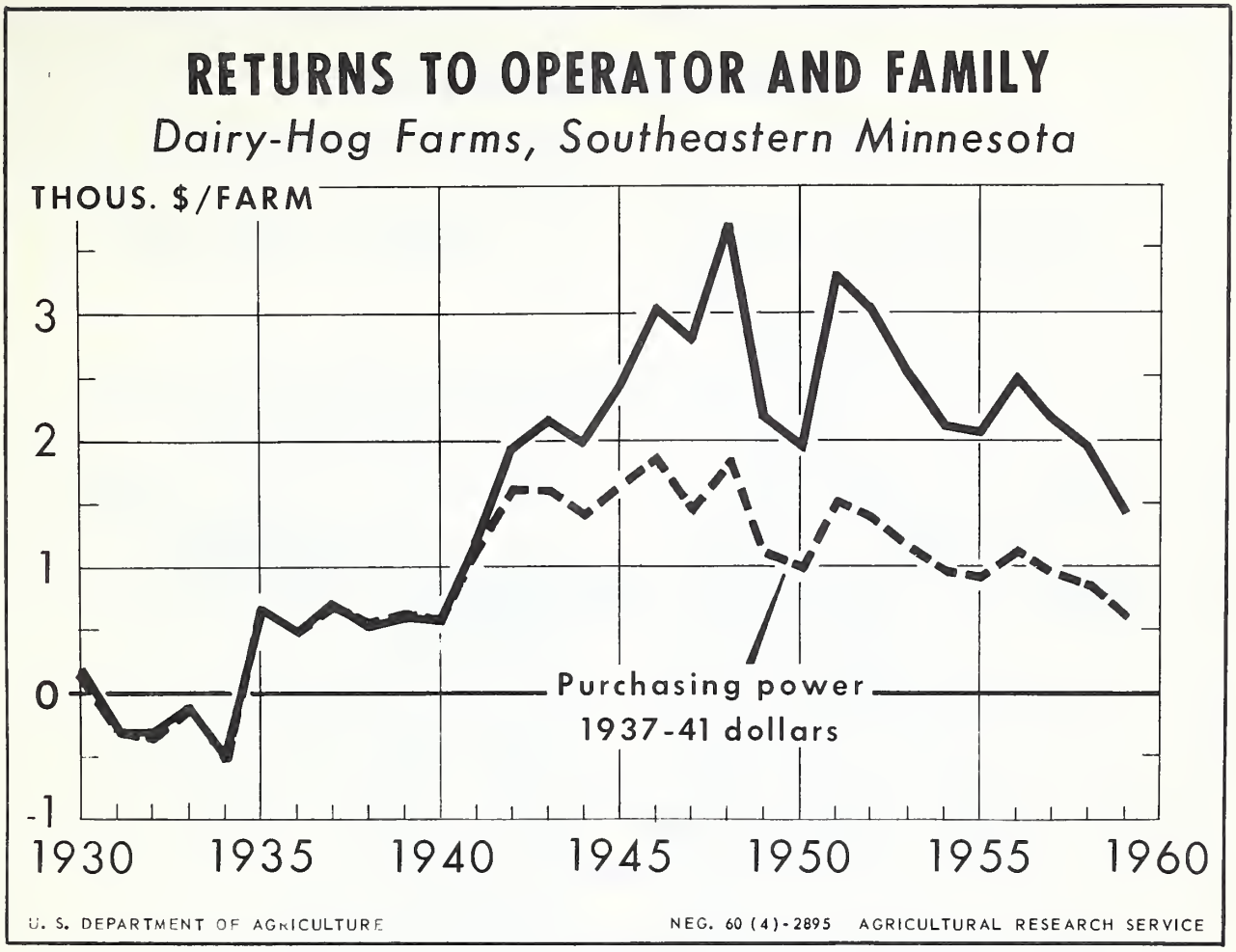

Figure 13

the 30-year period studied, crop yields and livestock production per animal unit (grain-consuming) increased; in 1959, they were about 50 percent greater than in 1930 (fig. 14). Larger crop yields resulting from use of improved seed and more and better pesticides, in addition to the greater use of commercial fertilizer, increased farm production per acre of land. Also, greater livestock production per animal unit resulted from better livestock-management practices, which improved the inherent characteristics of the livestock and made possible heavier feeding of more balanced rations.

This increased production was obtained during a period when capital was being substituted for labor. As previously mentioned, tractors replaced horses in the earlier years, and newer, larger, and additional machines were bought to perform work previously done by hand or with horse labor. Hybrid corn and certified seed were purchased, and crops were treated with herbicides and insecticides. Better livestock was produced by using artificial breeding, and fewer deaths from other than natural causes resulted because more of the newer and better medical facilities were used.

The substitution of capital for labor magnified the rise in production per hour of labor. It increased 160 percent throughout the period of study, with the largest increases occurring after 1944 when production per farm continued to increase and hours of labor were reduced. Between 1945 and 1959, production per hour of labor was doubled through increasing output by more than half and

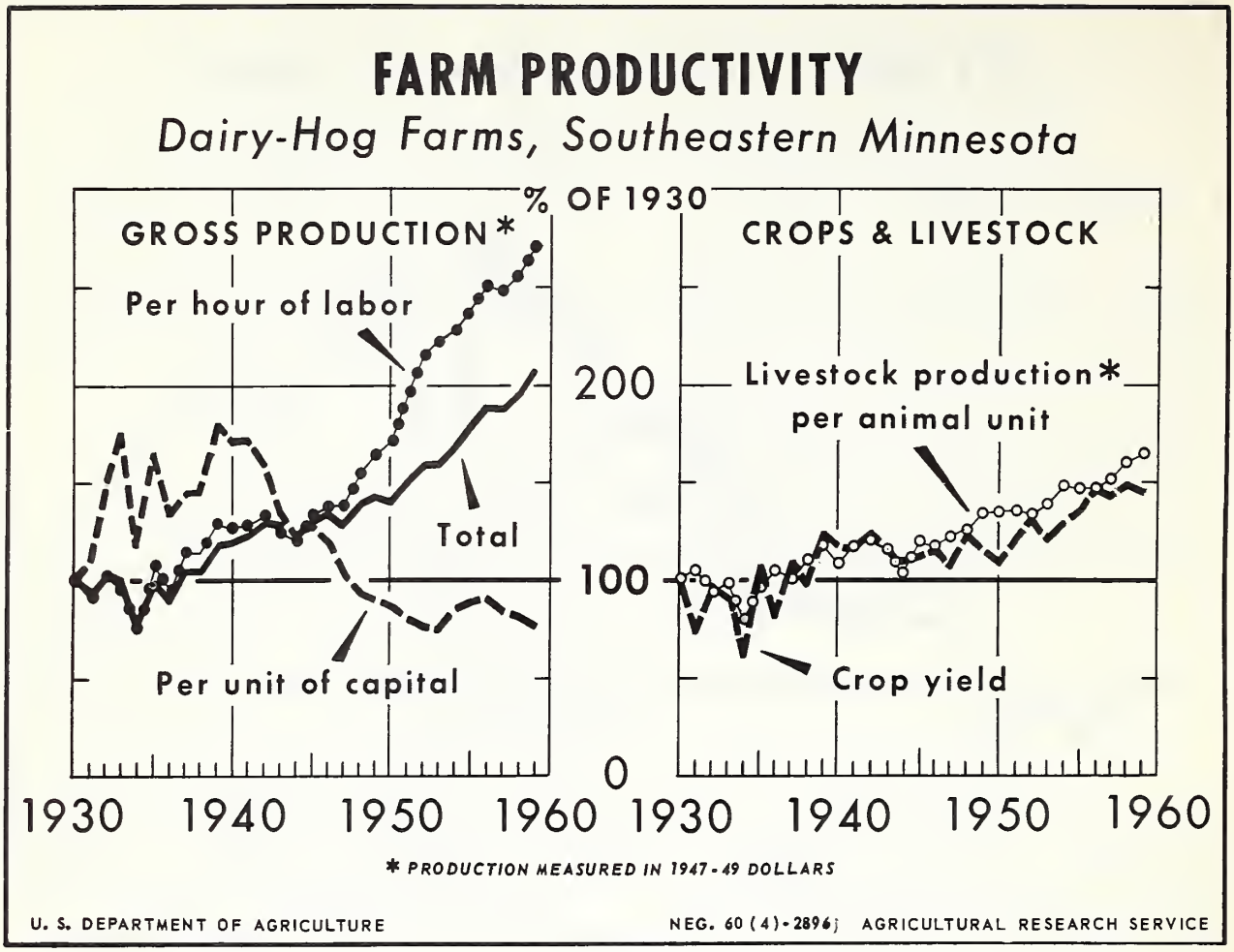

Figure 14

with the use of a fourth less labor. Some of the increases in production per hour of labor must be attributed to more skilled operation or increased labor productivity. The increases in crop, livestock, and labor productivities suggest an overall increase in production per unit of all inputs. The actual amount of increase is difficult to determine, but a rough measure of change is shown in appendix table 18. This is a ratio of production to inputs, all of which are measured in 1947-49 dollars.[6] Using this measure of change and realizing that gross farm production is the product of inputs and production per unit of input, it may be shown that about two-thirds of the changes in gross production from 1930 to 1959 were due to changes in production per unit of input and that one-third was due to the use of more inputs. The largest increase in total inputs occurred during the early years of World War II; and relative to 1930, inputs contributed more to gross production than production per unit of input from 1942 to 1947. After 1950, however, production per unit of input was about twice as important as inputs.

Net production per farm reflects the addition to agricultural production but not net additions as it includes inputs of nonfarm origin. Thus, the purchases of feed, livestock, and seed of agricultural origin

[6]The base period 1947-49 was used to make these figures comparable to those published for the United States and those for the other types of commercial farms. A brief discussion of this base period as it affects these data appears in the appendix.

that are marketed through livestock and livestock products are subtracted from gross production, but purchases of fertilizer, machinery, and so on are not subtracted. As defined, net production is a measure of size of the farm business; it is useful in comparing farm production from different types of farm operations.

Total Inputs

Although in 1958, gross production was 2-1/2 times as great as in 1934, it was achieved with less than a third more inputs (total costs at 1947-49 prices). [7] The increase in inputs resulted from the purchase of more goods and services of nonfarm origin and an increase in size of farm. The magnitude of these increases is not readily apparent because of the decline in labor inputs (fig. 15). Inputs of farm machinery alone had more than doubled since 1934. These additional inputs represent not only larger numbers but also larger, newer, more versatile, and better equipped machines. Among the other purchased inputs with the largest percentage increases were motor supplies, commercial fertilizer, lime, crop sprays, electricity, and telephone service. Most of these increases resulted from additional purchases of inputs that were already used on some farms in 1930. However, many new inputs, such as DDT and 2, 4-D, came into use after 1930.

Many farm inputs were replaced by inputs of nonfarm origin. The substitution of tractors, trucks, and automobiles for horsepower and man labor is probably the most striking example of this replacement. Inputs of machinery doubled from 1930 to 1957, while the number of horses declined from an average of about 5 per farm to less than 1 and labor inputs decreased by about a fourth. Most of the increase in mechanization occurred on these farms between 1940 and 1950, but most of the reduction in number of hours of labor used occurred between 1945 and 1950.

Some machines make farmwork easier or have other advantages without necessarily reducing the number of hours of labor used. This was true of the first windrow pickup balers, which were not equipped with automatic tying devices. Recent studies of bulk tank installations on most dairy farms have shown no conclusive evidence of labor saved at the farm. But with these installations, farmers generally experienced smaller losses of milk and received a slightly higher price per hundredweight of milk.

[7] The measurement of change in the physical quantities of items used in production becomes difficult, as changes in quality actually are equivalent changes in quantity. During the period of study, the quality of most items used in production improved. It is generally recognized that farm labor is more skilled today than it was in 1930, but an adequate method of measuring these changes has not been devised. Thus, changes in quality and, therefore, changes in quantity of inputs are usually underestimated.

APPENDIX

Comparison of Effects of 1947-49 and 1930-58 Price Weights in Estimating Inputs, Production, and Related Factors, Minnesota Dairy-Hog Farms

Estimates of inputs, production, and production per unit of input as calculated depend upon the relative prices of goods purchased and products sold in the selected base period. For a series of years, average price weights are usually preferred to weights for a few years within the period. In general, the 1947-49 prices (compared with the average prices for the whole period) paid for items used in production were higher than the prices received for products sold. Items of expenditure in 1947-49 with prices most above the average for the whole period

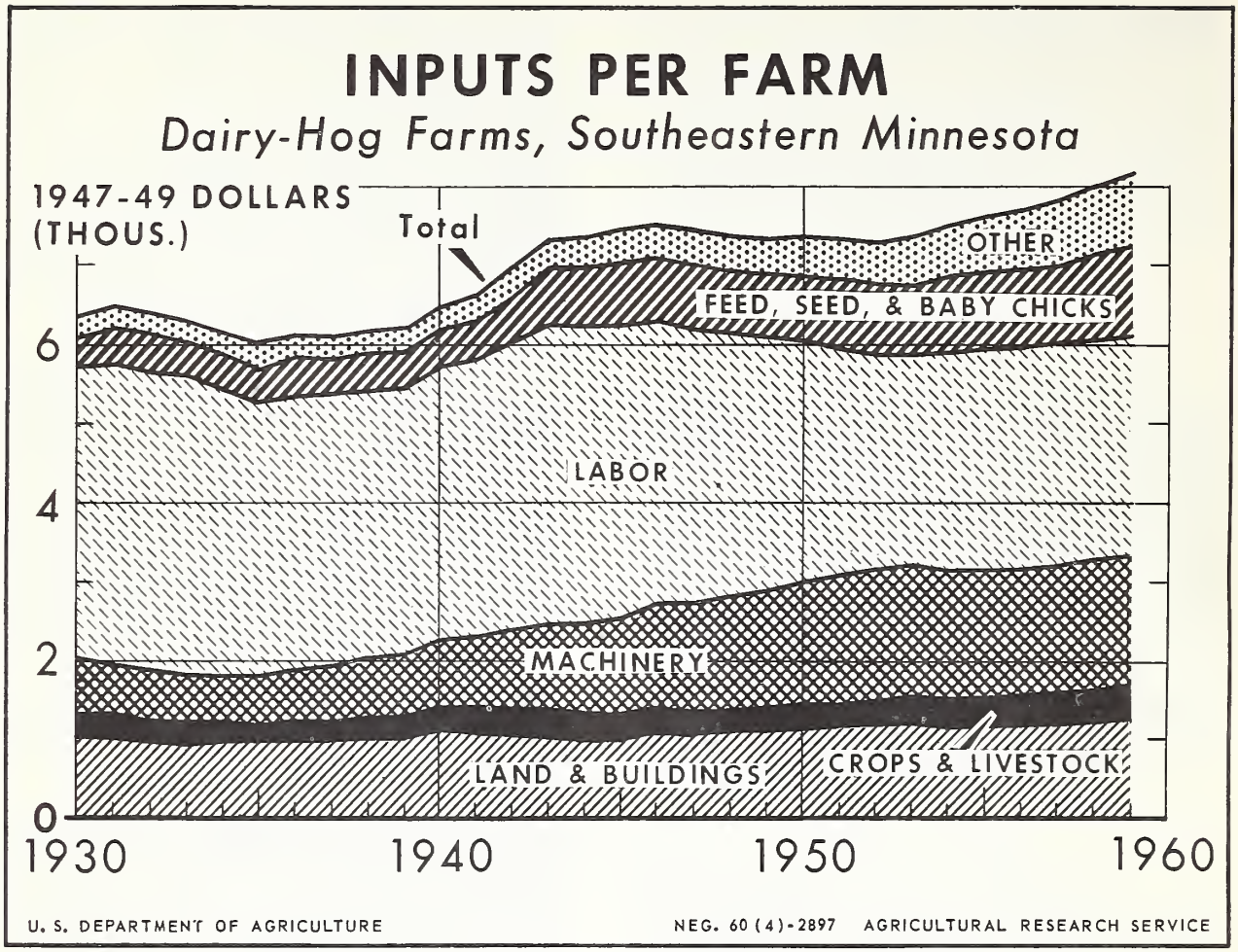

Figure 15

(1930-58) were hired labor, livestock and poultry feed, and all seed other than timothy. In the same period, higher than average prices were received for hogs, chickens, and eggs.

The commodities (either bought or sold) having relatively high prices in the base period result in proportionately greater weights being assigned to the inputs and production (as measured here) of these particular items and products. The effect of estimates of changes in inputs or production depends upon the relative price in the base period and the quantities of items used or sold throughout the period provided there were changes in relative prices and quantities.

With 1947-49 prices feed inputs were proportionately more important than with 1930-58 prices. The relatively high price weights of 1947-49 with the increased purchases throughout the period give the greater estimates of change in inputs. Also, a higher relative price for labor in 1947-49 as compared with 1930-58 accompanied by the decline in the amount of labor would give greater estimates of changes in labor inputs. But with lower relative prices plus an increase in quantity, estimates of change in quantity will be lower as will be true of lower relative prices plus a decrease in quantity.

In these data, the distortion in estimates of both inputs and production resulting from the differences in relative prices in 1947-49 as compared with 1930-58 seems to be compensating. Estimates made of changes in total inputs (with 1947-49 prices used rather than average prices for the period) were lower as were those

made of changes in total production. Estimates of changes in production per unit of input were about the same using 1947-49 prices as using average prices for the whole period. It is more likely that biases in the input and production indexes result from underestimating the changes in the quantities of inputs that resulted from changes in quality.

The overall effect of using 1947-49 rather than average quantity weights for estimating changes in prices received and prices paid was an overstatement of the change. Changes in prices received from 1930 to 1948 were about 2 percent greater with 1947-49 weights than with average quantity weights, and changes in prices paid were about 8 percent greater.

Definition of Terms

Terms used in this presentation are those commonly used in most farm-management studies. They are defined here for the general reader who may not be familiar with them and for farm management specialists who may use different procedures for calculating similar expressions.

Animal unit - The equivalent of a dairy cow in terms of grain consumption.

Grain-consuming - Includes all livestock and poultry on the farm January 1. The number of grain-consuming animal units is equal to the number of cattle 2 years old and over, plus the number of workstock, half the cattle under 2 years of age, the number of chickens divided by 50, and the number of hogs divided by 2.5.

Roughage-consuming - Grain-consuming animal units other than hogs and chickens.

Capital charge - The January 1 current interest rate of the Federal Land Bank in St. Paul multiplied by the January 1 value of all capital (land and buildings, livestock, crops in inventory, and machinery and equipment).

Expenses:

Cash - All expenditures incurred throughout the calendar year for production goods and services. This included only half of the operating expenses of the automobile. It excluded repairs of the operator's dwelling, money paid out as interest, and rental payments.

Total operating - Cash expenditures plus or minus changes in inventory of machinery and buildings. Any increases in these inventories are subtracted from cash expenditures. Decreases in such inventories are added to cash expenditures.

Farm:

Commercial - Most farms were classified as commercial by the Bureau of the Census in 1954 if sales of farm products amounted to $1,200 or more. Institutional farms and the like were exceptions. Farms with sales of $250 to $1,199 were classified as commercial only if the farm operator worked off the farm for less than 100 days or if the income of the farm operator and members of his family from non-farm sources was less than the total value of all farm products sold.

Dairy - Commercial farms on which sales of milk and other dairy products accounted for 50 percent or more of the value of all farm products sold. Also, commercial farms for which the value of sales of dairy products represented less than 50 percent of the total value of farm products sold were also classified as dairy farms if (a) milk and other dairy products accounted for 30 percent or more of the total value of products sold, (b) milk cows represented 50 percent or more of all cows, and (c) sales of dairy products, together with sales of cattle and calves, amounted to 50 percent or more of the total value of farm products sold.

Dairy-hog - Dairy farms in economic classes II through V (with sales of farm products valued between $1,200 and $25,000), from

which 5 or more hogs are sold.

Feed:

Commercial - Purchased concentrates other than grains. They include formula feeds, protein supplements, and processed grain feeds.

Concentrates - All grains and grain feeds as distinct from roughage. Includes all purchased and homegrown grain or feed.

Formula feed - Mixed rations normally fed directly.

Protein supplement - Such high-protein feeds as soybean meal, linseed oilmeal, cottonseed meal, tankage, meat scrap, and so on.

Hay equivalent - The weight of hay plus a third of the weight of silage.

Income:

Gross farm income - Cash receipts from farm operations plus value of perquisites, plus or minus change in inventory of crops and livestock.

Net cash income - Cash receipts minus cash expenditures.

Net farm income - Gross farm income minus total operating expenses. Also, net cash income plus value of perquisites plus or minus inventory changes of crops, livestock, machinery, and equipment. It is the return to the operator and family for unpaid labor and management plus the return on investment. It does not include increases in capital assets or in income from off-farm and nonfarm sources.

Indexes:

Crop yield - The sum of all crop yields weighted by the value of their production in 1947-49 all expressed as a percentage of the 1947-49 crop values.

Gross production - The value of livestock and livestock products sold, perquisites used in the home, and changes in inventories of crops and livestock at 1947-49 prices.

Net production - Gross production minus the value of purchased feed, seed, and livestock at 1947-49 prices.

Operating expenses per unit of production - Total operating expenses divided by gross production.

Power and machinery - Value of tractors, motortrucks, automobiles (farm share), and other farm machinery at 1947-49 prices.

Prices paid - The value of all purchased goods and services used in production including wages paid valued at current prices and divided by the value of the same quantities at 1947-49 prices.

Prices received - The value of all products sold and used in the home valued at current prices divided by the same quantities valued at 1947-49 prices.

Production per hour of man labor - Gross production divided by total number of hours of labor.

Production per unit of input - Gross production divided by the total inputs.

Inputs, total - All resources used in production valued at 1947-49 prices. Land and building inputs include repairs on buildings, charges for real estate capital, and real estate taxes. Machinery inputs include depreciation and repairs, operating costs, charge for machinery capital, and personal property taxes on machines. Other capital inputs include interest and personal property taxes on livestock and crops in inventory on January 1. Labor inputs include operator, family, and hired labor. Inputs of feed, seed, and baby chicks include purchased items only. Other inputs include fertilizer, lime, artificial insemination, grinding and mixing feed, spray materials, miscellaneous crop and livestock expenses, telephone, electricity, and insurance.

Inventory change - The changes in value of crops and livestock at year-end prices plus the difference between expenditures on and depreciation of farm buildings, fences, machinery, and equipment. No changes in value caused by changing prices throughout the year are included. In

obtaining gross income, increases in inventories of crops and livestock are added to cash receipts and decreases are subtracted from them. In obtaining total operating expenses, increases in inventories of machinery and buildings are subtracted from, and decreases are added to, cash expenses.

Land:

Total - All land operated as a farm unit. It includes all land owned plus land rented from others but excludes land rented to others.

Cropland harvested - Land from which cultivated crops, hay, silage, or small grains was harvested. Land on which more than one crop was grown in any one year was included only once.

Open pasture - Cleared permanent pasture and cropland pastured.

Other land - All woodland, idle cropland, wasteland, fence rows, roads, land containing and surrounding farm buildings, barnyards, and feedlots.

Perquisites - All farm products consumed on the farm where produced. Their value is estimated by using current farm prices. Prices of all grains, livestock, livestock products, vegetables, fruits, and fuel produced and consumed on the farm, and a rental charge for the use of the farm dwelling are included. The rental charge of 8 percent of the current value of the dwelling compensates for some dwelling costs, such as taxes and interest, that are charged to the farm business.

Receipts, cash - The total amount of cash received during the calendar year from sales of crops, livestock, livestock products, and from all government payments. Receipts include all current sales whether from the current year's production or from inventories on hand at the beginning of the year.

Table 4.—Size of farm, land use, and crops harvested, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Total Land	Land Use			Crops Harvested			
		Cropland harvested	Open pasture	All other	Corn		Small grains	Hay 1/
					For Grain	For Silage		
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
1930 ------	134	80	24	30	14.7	7.2	35.7	22.4
1931 ------	134	82	24	28	15.0	8.4	34.7	23.6
1932 ------	134	84	22	28	16.3	7.7	34.9	24.6
1933 ------	134	82	23	29	16.7	6.1	33.2	26.1
1934 ------	134	75	25	34	13.8	10.8	30.0	20.4
1935 ------	134	80	24	30	14.3	7.6	35.8	22.8
1936 ------	134	80	22	32	13.3	8.9	34.4	23.7
1937 ------	134	81	22	31	16.6	7.1	35.1	22.3
1938 ------	134	80	23	31	15.4	6.2	36.6	21.3
1939 ------	135	78	25	32	15.5	5.6	34.2	22.7
1940 ------	135	81	24	30	14.8	6.3	35.7	23.9
1941 ------	136	81	24	31	15.3	6.3	36.0	23.8
1942 ------	136	81	25	30	17.1	6.6	35.4	22.1
1943 ------	137	84	24	29	20.0	6.8	34.7	22.2
1944 ------	137	86	21	30	22.8	8.9	31.7	22.6
1945 ------	138	91	20	27	21.2	10.5	35.9	23.1
1946 ------	139	89	21	29	20.8	8.4	36.2	23.3
1947 ------	140	86	25	29	20.0	9.5	32.7	23.8
1948 ------	142	87	26	29	20.1	8.4	34.9	23.5
1949 ------	144	90	24	30	22.0	9.5	35.7	22.8
1950 ------	146	91	24	31	18.6	10.7	36.4	25.7
1951 ------	148	91	26	31	20.5	10.0	36.0	24.8
1952 ------	150	93	27	30	21.6	8.3	37.2	25.6
1953 ------	151	94	26	31	24.2	8.2	36.1	25.2
1954 ------	152	92	28	32	22.8	8.4	35.3	25.5
1955 ------	153	92	29	32	25.7	7.4	32.3	26.3
1956 ------	154	92	29	33	27.7	7.1	31.4	26.1
1957 ------	155	93	29	33	28.3	8.3	29.5	26.4
1958 ------	156	94	29	33	28.9	10.4	28.5	25.8
1959 2/----	158	99	26	33	34.3	10.5	29.0	25.6

1/ Includes grass silage.
2/ Preliminary.

Table 5. —Acreage, yield, and production of corn and hay, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Corn —						Hay		
	For grain			For silage			Acreage[1/]	Yield	Production
	Acreage	Yield	Production	Acreage	Yield	Production			
	Acres	Bushels	Bushels	Acres	Tons	Tons	Acres	Tons	Tons
1930 ------	14.7	37.3	548	7.2	7.5	54.0	22.4	1.50	34
1931 ------	15.0	24.5	368	8.4	5.9	49.6	23.6	1.40	33
1932 ------	16.3	34.4	561	7.7	8.0	61.6	24.6	1.86	46
1933 ------	16.7	40.3	673	6.1	9.1	55.5	26.1	1.47	38
1934 ------	13.8	28.4	392	10.8	5.7	61.6	20.4	1.00	20
1935 ------	14.3	37.4	535	7.6	8.7	66.1	22.8	2.08	47
1936 ------	13.3	28.4	378	8.9	5.0	44.5	23.7	1.82	43
1937 ------	16.6	39.1	649	7.1	7.2	51.1	22.3	1.93	43
1938 ------	15.4	38.1	587	6.2	8.0	49.6	21.3	1.96	42
1939 ------	15.5	48.6	753	5.6	9.0	50.4	22.7	2.03	46
1940 ------	14.8	44.4	657	6.3	9.0	56.7	23.9	2.06	49
1941 ------	15.3	46.0	704	6.3	8.6	54.2	23.8	1.91	45
1942 ------	17.1	48.4	828	6.6	9.1	60.1	22.1	2.44	54
1943 ------	20.0	47.6	952	6.8	8.4	57.1	22.2	2.19	49
1944 ------	22.8	47.0	1,072	8.9	7.0	62.3	22.6	1.92	43
1945 ------	21.2	39.5	837	10.5	6.4	67.2	23.1	2.18	50
1946 ------	20.8	44.8	932	8.4	7.8	65.5	23.3	2.03	47
1947 ------	20.0	39.2	784	9.5	7.2	68.4	23.8	2.05	49
1948 ------	20.1	52.7	1,059	8.4	8.6	72.2	23.5	1.86	44
1949 ------	22.0	46.7	1,027	9.5	8.5	80.8	22.8	1.79	41
1950 ------	18.6	39.7	738	10.7	7.5	80.2	25.7	2.03	52
1951 ------	20.5	43.5	892	10.0	7.8	78.0	24.8	2.20	55
1952 ------	21.6	54.2	1,171	8.3	8.8	73.0	25.6	2.40	61
1953 ------	24.2	49.7	1,203	8.2	8.7	71.3	25.2	2.35	59
1954 ------	22.8	53.1	1,211	8.4	9.2	77.3	25.5	2.37	60
1955 ------	25.7	54.6	1,403	7.4	9.6	71.0	26.3	2.48	65
1956 ------	27.7	62.5	1,731	7.1	10.7	76.0	26.1	2.68	70
1957 ------	28.3	58.4	1,653	8.3	10.5	87.2	26.4	2.62	69
1958 ------	28.9	57.8	1,670	10.4	9.4	97.8	25.8	2.50	64
1959 2/----	34.3	56.0	1,921	10.5	9.9	104.0	25.6	2.63	67

1/ Includes grasses and legumes harvested for silage.

2/ Preliminary.

Table 6.-Acreage, yield, and production of small grains, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Oats			Barley			Wheat			Production of all small grains
	Acreage	Yield	Production	Acreage	Yield	Production	Acreage	Yield	Production	
	Acres	Bushels	Bushels	Acres	Bushels	Bushels	Acres	Bushels	Bushels	100 pounds
1930 ---	21.6	41.5	896	9.3	26.5	246	4.8	17.1	82	454
1931 ---	21.3	29.9	637	9.6	23.0	221	3.8	15.3	58	345
1932 ---	19.8	37.7	746	10.0	25.7	257	5.1	15.0	76	408
1933 ---	17.5	26.8	469	10.3	20.2	208	5.4	14.3	77	296
1934 ---	15.0	14.4	216	10.4	12.3	128	4.6	9.5	44	157
1935 ---	18.3	39.3	719	12.4	25.1	311	5.1	12.2	62	417
1936 ---	18.3	26.7	489	11.3	17.6	199	4.8	12.0	58	287
1937 ---	20.0	42.4	848	10.3	26.2	270	4.8	18.6	89	454
1938 ---	21.2	30.7	651	9.8	24.5	240	5.6	14.5	81	372
1939 ---	21.7	46.1	1,000	8.9	28.3	252	3.6	11.3	41	466
1940 ---	23.4	43.4	1,016	8.1	36.0	292	4.2	17.6	74	510
1941 ---	24.7	40.5	1,000	7.3	33.9	247	4.0	13.0	52	470
1942 ---	24.6	40.1	986	7.1	26.6	189	3.7	19.4	72	449
1943 ---	26.6	30.3	806	4.9	17.3	85	3.2	13.9	44	325
1944 ---	31.7	33.4	1,059	---	---	---	---	---	---	339
1945 ---	35.9	41.9	1,504	---	---	---	---	---	---	481
1946 ---	36.2	38.8	1,405	---	---	---	---	---	---	450
1947 ---	32.7	38.9	1,272	---	---	---	---	---	---	407
1948 ---	34.9	42.4	1,480	---	---	---	---	---	---	474
1949 ---	35.7	39.9	1,424	---	---	---	---	---	---	456
1950 ---	36.4	38.7	1,409	---	---	---	---	---	---	451
1951 ---	36.0	45.1	1,624	---	---	---	---	---	---	520
1952 ---	37.2	41.6	1,548	---	---	---	---	---	---	495
1953 ---	36.1	33.5	1,209	---	---	---	---	---	---	387
1954 ---	35.3	38.4	1,356	---	---	---	---	---	---	434
1955 ---	32.3	43.6	1,408	---	---	---	---	---	---	451
1956 ---	31.4	42.2	1,325	---	---	---	---	---	---	424
1957 ---	29.5	44.2	1,304	---	---	---	---	---	---	417
1958 ---	28.5	54.1	1,542	---	---	---	---	---	---	493
1959 1/ -	29.0	52.5	1,522	---	---	---	---	---	---	487

1/ Preliminary.

Table 7. — Livestock and poultry, commercial family-operated dairy-hog farms, southeastern Minnesota, Jan. 1, 1930-59

Year	All cattle and calves	Cows of milking age	Heifers 1 year old and over	Calves	Other cattle	Work-stock	Chickens	Hogs	Animal units 1/	
									Roughage-consuming	Grain-consuming
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
1930 ---	20.2	13.0	3.0	3.5	0.7	4.8	116	20.5	21.7	32.2
1931 ---	20.5	13.2	3.0	3.5	.8	4.7	119	22.1	21.8	33.0
1932 ---	21.0	13.7	3.0	3.4	.9	4.6	121	24.1	22.3	34.3
1933 ---	21.6	14.2	2.9	3.5	1.0	4.5	123	22.3	22.8	34.2
1934 ---	22.2	15.0	3.0	3.1	1.1	4.4	133	21.8	23.6	35.0
1935 ---	20.8	14.1	2.6	3.0	1.1	4.3	122	12.8	22.2	29.7
1936 ---	20.7	13.8	2.5	3.3	1.1	4.2	122	15.0	21.9	30.3
1937 ---	20.9	13.7	2.8	3.3	1.1	4.1	128	14.9	21.9	30.5
1938 ---	21.4	14.0	2.8	3.5	1.1	4.0	116	16.4	22.2	31.1
1939 ---	22.0	14.2	3.0	3.7	1.1	3.9	121	18.5	22.2	32.0
1940 ---	23.0	14.9	3.2	3.8	1.1	3.8	133	24.6	23.2	35.7
1941 ---	23.6	15.2	3.3	4.0	1.1	3.7	132	20.6	23.6	34.4
1942 ---	24.5	15.8	3.5	4.1	1.1	3.6	155	23.8	24.3	36.9
1943 ---	25.5	16.5	3.6	4.3	1.1	3.5	185	28.3	25.3	40.3
1944 ---	26.0	16.8	3.8	4.3	1.1	3.4	198	28.6	25.2	40.6
1945 ---	25.8	16.6	3.8	4.3	1.1	3.3	183	19.5	25.0	36.5
1946 ---	25.6	16.4	3.8	4.3	1.1	3.0	187	23.0	24.4	37.3
1947 ---	25.8	16.6	3.8	4.3	1.1	2.7	180	19.3	24.4	35.7
1948 ---	24.7	15.7	3.8	4.1	1.1	2.5	165	18.3	23.2	33.8
1949 ---	25.0	15.8	3.6	4.5	1.1	2.2	154	20.1	23.0	34.1
1950 ---	25.8	16.1	4.0	4.7	1.0	2.0	165	20.9	23.3	35.0
1951 ---	26.2	16.1	4.2	5.0	.9	1.8	159	23.1	23.3	35.7
1952 ---	27.0	16.1	4.4	5.5	1.0	1.6	153	25.0	23.5	36.6
1953 ---	29.1	17.4	4.9	5.8	1.0	1.4	148	21.4	25.0	36.6
1954 ---	30.7	18.5	5.2	6.1	.9	1.2	149	18.9	26.0	36.6
1955 ---	31.1	18.7	5.5	6.0	.9	1.0	153	23.2	26.2	38.6
1956 ---	31.6	19.2	5.4	6.1	.9	1.0	150	23.6	26.7	39.1
1957 ---	32.3	19.7	5.5	6.2	.9	.8	155	20.8	27.0	38.4
1958 ---	32.6	19.7	5.8	6.4	.7	.7	141	20.8	27.0	38.1
1959 2/-	32.7	19.8	5.9	6.3	.7	.6	139	23.7	27.0	39.3

1/ An animal unit is the equivalent of 1 dairy cow in terms of feed consumption.
2/ Preliminary.

Table 8. — Numbers and disposition of cattle and calves, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Cattle and calves Jan. 1	Calves born	Sales		Death losses		Slaughtered for home use	
			Cattle	Calves	Cattle	Calves	Cattle	Calves
	Number	Number	Number	Number	Number	Number	Number	Number
1930 -------	20.2	11.4	2.9	6.8	0.2	0.8	0.1	0.3
1931 -------	20.5	11.6	2.5	7.3	.3	.7	.1	.2
1932 -------	21.0	12.3	2.4	7.7	.3	.9	.2	.2
1933 -------	21.6	12.6	2.1	8.2	.3	.9	.1	.4
1934 -------	22.2	13.2	3.9	9.0	.4	.9	.1	.3
1935 -------	20.8	11.8	2.9	7.1	.3	1.0	.2	.4
1936 -------	20.7	12.0	2.7	7.5	.3	.9	.1	.3
1937 -------	20.9	12.3	2.6	7.6	.3	.9	.1	.3
1938 -------	21.4	12.5	2.7	7.5	.3	.9	.1	.4
1939 -------	22.0	12.9	2.3	7.8	.4	.9	.1	.4
1940 -------	23.0	13.7	2.9	8.3	.4	1.0	.1	.4
1941 -------	23.6	14.1	2.7	8.6	.4	1.0	.1	.4
1942 -------	24.5	14.7	2.8	8.9	.4	1.1	.1	.4
1943 -------	25.5	14.8	3.1	9.0	.5	1.2	.2	.3
1944 -------	26.0	15.5	3.8	9.5	.5	1.3	.2	.4
1945 -------	25.8	13.9	3.9	8.0	.4	1.2	.2	.4
1946 -------	25.6	14.4	3.5	8.5	.4	1.2	.2	.4
1947 -------	25.8	14.4	4.6	8.8	.4	1.1	.2	.4
1948 -------	24.7	14.1	3.6	8.3	.4	1.0	.2	.3
1949 -------	25.0	14.4	3.3	8.4	.4	1.0	.2	.3
1950 -------	25.8	14.8	4.0	8.5	.4	1.1	.2	.2
1951 -------	26.2	14.7	4.0	8.0	.5	1.0	.2	.2
1952 -------	27.0	14.9	3.0	7.8	.5	1.1	.2	.2
1953 -------	29.1	16.5	3.8	9.0	.4	1.2	.3	.2
1954 -------	30.7	17.0	4.9	9.5	.4	1.2	.3	.3
1955 -------	31.1	17.6	4.8	10.1	.5	1.2	.3	.2
1956 -------	31.6	18.0	4.7	10.4	.4	1.2	.4	.2
1957 -------	32.3	18.1	5.4	10.3	.4	1.2	.3	.2
1958 -------	32.6	17.9	5.4	10.2	.5	1.2	.3	.2
1959 1/-----	32.7	17.9	5.5	9.9	.5	1.2	.3	.2

1/ Preliminary.

Table 9.—Numbers and disposition of hogs and pigs, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	All hogs and pigs Jan. 1	Pigs saved		Death loss	Sales and slaughter for home use			Hog production	All hogs and pigs Jan. 1
		Spring	Fall		Total	Sales	Home use		
	Number	Number	Number	Number	Number	Pounds	Pounds	Pounds	Pounds
1930 ----	20.5	27.9	7.3	3.5	30.1	6,046	576	6,977	4,076
1931 ----	22.1	32.6	9.5	4.5	35.6	7,208	588	8,046	4,431
1932 ----	24.1	26.3	7.9	2.8	33.2	6,475	596	6,873	4,681
1933 ----	22.3	29.3	8.6	2.9	35.5	6,636	606	6,868	4,483
1934 ----	21.8	20.3	4.3	3.1	30.5	5,990	568	4,988	4,109
1935 ----	12.8	15.4	7.9	2.3	18.8	3,682	698	4,711	2,539
1936 ----	15.0	22.4	8.0	2.5	28.0	5,770	670	6,374	2,870
1937 ----	14.9	20.5	7.2	2.4	23.8	4,840	634	5,930	2,804
1938 ----	16.4	24.7	8.4	2.3	28.7	6,210	621	7,257	3,260
1939 ----	18.5	30.3	9.6	3.1	30.7	6,899	592	8,563	3,686
1940 ----	24.6	28.4	9.4	2.8	39.0	8,606	715	8,521	4,758
1941 ----	20.6	27.9	11.1	2.9	32.9	7,370	690	8,556	3,958
1942 ----	23.8	30.8	12.2	3.3	35.2	8,001	658	9,549	4,454
1943 ----	28.3	34.1	12.6	4.8	41.6	9,881	727	10,442	5,344
1944 ----	28.6	23.5	7.5	3.1	37.0	8,378	687	7,660	5,178
1945 ----	19.5	24.0	10.0	2.8	27.7	6,562	751	7,787	3,773
1946 ----	23.0	23.4	7.6	2.5	32.2	7,445	766	7,794	4,247
1947 ----	19.3	24.9	7.8	3.2	30.5	7,322	699	7,716	3,830
1948 ----	18.3	23.2	8.9	2.9	27.4	6,579	682	7,509	3,525
1949 ----	20.1	27.7	10.4	4.1	33.2	7,894	638	8,591	3,773
1950 ----	20.9	29.2	12.3	4.1	35.2	8,151	649	9,051	3,832
1951 ----	23.1	30.6	12.7	4.6	36.8	8,650	660	9,647	4,083
1952 ----	25.0	27.1	12.4	3.8	39.3	9,061	646	8,969	4,420
1953 ----	21.4	24.4	11.4	3.6	34.7	7,698	595	7,843	3,682
1954 ----	18.9	28.6	14.2	3.5	35.0	7,885	620	9,143	3,232
1955 ----	23.2	30.4	15.0	3.9	41.1	9,246	659	9,874	3,870
1956 ----	23.6	26.2	14.7	3.4	40.3	8,860	612	8,943	3,839
1957 ----	20.8	26.6	14.8	3.5	37.9	8,582	590	9,168	3,310
1958 ----	20.8	26.9	18.0	3.5	38.5	9,022	565	9,864	3,306
1959 1/--	23.7	30.4	18.0	3.8	45.5	10,780	550	11,066	3,583

1/ Preliminary.

Table 10. —Roughage and concentrates fed, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Hay equivalent fed to 1/ -							Concentrates fed to all livestock and poultry		
	Dairy cows		Other cattle		Horses		All livestock			
	Per head 2/	Total	Per head 2/	Total	Per head 2/	Total		Home-grown	Purchased	Total
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	100 pounds	100 pounds	100 pounds
1930	2.8	36.4	1.10	8.0	2.00	9.6	54.0	670	47	717
1931	2.7	35.6	1.10	8.1	2.05	9.6	53.3	717	64	781
1932	2.7	37.0	1.10	8.1	1.80	8.3	53.4	654	71	725
1933	2.7	39.8	1.14	8.3	1.95	8.8	56.9	678	51	729
1934	2.7	39.0	1.17	8.2	1.60	7.0	54.2	529	55	584
1935	3.0	42.3	1.05	7.2	1.55	6.7	56.2	509	60	569
1936	3.1	42.8	1.21	8.5	2.05	8.6	59.9	618	68	686
1937	3.0	41.1	1.15	8.4	1.80	7.4	56.9	583	61	644
1938	3.0	42.0	1.09	8.3	1.85	7.4	57.7	657	63	720
1939	3.0	44.0	1.14	9.1	1.80	7.0	60.1	721	56	777
1940	3.2	47.7	1.22	10.0	2.30	8.7	66.4	767	56	823
1941	3.0	47.1	1.22	10.5	2.50	9.2	66.8	800	61	861
1942	3.1	50.6	1.28	11.3	2.50	9.0	70.9	915	84	999
1943	3.1	51.2	1.21	11.0	2.35	8.2	70.4	1,045	110	1,155
1944	3.1	52.1	1.16	10.7	2.08	7.1	69.9	874	124	998
1945	3.3	54.8	1.30	12.0	2.00	6.6	73.4	874	135	1,009
1946	3.3	54.1	1.30	12.0	1.80	5.4	71.5	852	141	993
1947	3.3	53.1	1.26	11.5	1.70	4.6	69.2	809	143	952
1948	3.2	50.2	1.15	10.5	1.70	4.3	65.0	740	132	872
1949	3.4	53.7	1.20	11.3	1.61	3.5	68.5	836	136	972
1950	3.6	58.0	1.34	13.3	1.65	3.3	74.6	849	143	992
1951	3.7	59.6	1.34	14.1	1.90	3.4	77.1	840	152	992
1952	3.6	59.6	1.36	15.4	1.80	2.9	77.9	859	146	1,005
1953	3.6	64.4	1.38	16.5	1.70	2.4	83.3	807	146	953
1954	3.6	66.6	1.36	16.7	1.60	1.9	85.2	872	165	1,037
1955	3.6	69.2	1.42	17.6	1.60	1.6	88.4	908	174	1,082
1956	3.7	72.5	1.50	18.8	1.60	1.6	92.9	906	178	1,084
1957	3.7	72.9	1.52	19.3	1.60	1.3	93.5	930	181	1,111
1958	3.8	74.9	1.62	20.9	1.60	1.1	96.9	1,013	180	1,193
1959 3/	4.2	83.4	2.00	26.0	1.60	1.0	110.4	1,072	185	1,257

1/ Weight of hay fed plus one-third the weight of silage fed.
2/ Based on numbers on farm, Jan. 1.
3/ Preliminary.

Table 11.— Concentrates fed, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	To dairy cows		To other cattle		To hogs		To horses		To poultry		
	Per 100 pounds of milk	Total	Per head 1/	Total	Per 100 pounds produced	Total	Per head 2/	Total	Per chicken raised	Per layer 2/	Total
	Pounds	100 lbs.	Pounds	100 lbs.	Pounds	100 lbs.	Pounds	100 lbs.	Pounds	Pounds	100 lbs.
1930 -----	24	165	279	20	450	314	2,300	110	21	64	108
1931 -----	26	180	306	22	440	354	2,300	108	22	66	117
1932 -----	24	169	322	24	440	302	2,400	110	23	68	120
1933 -----	25	181	308	23	430	295	2,500	113	22	64	117
1934 -----	21	138	323	23	410	204	2,400	106	21	60	113
1935 -----	17	114	262	18	440	207	2,400	103	23	68	127
1936 -----	22	155	336	23	445	284	2,300	97	24	65	127
1937 -----	21	147	337	25	445	264	2,100	86	22	68	122
1938 -----	23	172	372	28	430	312	2,200	88	22	68	120
1939 -----	24	182	307	25	430	368	2,100	82	22	66	120
1940 -----	25	197	366	30	450	383	2,000	76	24	72	137
1941 -----	24	209	364	31	470	402	1,850	69	24	75	150
1942 -----	27	241	419	37	500	478	1,750	61	24	78	182
1943 -----	29	264	504	46	540	564	1,500	52	26	78	229
1944 -----	30	265	464	43	540	414	1,300	44	25	82	232
1945 -----	30	280	491	45	550	428	1,000	33	25	82	223
1946 -----	30	285	504	46	550	429	700	21	24	83	212
1947 -----	29	270	477	43	535	413	500	14	26	83	212
1948 -----	29	270	453	41	490	368	400	10	25	88	183
1949 -----	31	311	547	51	480	412	400	9	24	91	189
1950 -----	30	301	542	54	480	434	400	8	25	92	195
1951 -----	28	284	519	55	470	453	300	5	26	94	195
1952 -----	28	300	549	62	505	453	300	5	25	95	185
1953 -----	28	340	560	67	460	361	300	4	25	95	181
1954 -----	29	356	570	70	450	411	300	4	25	102	196
1955 -----	30	386	584	73	440	434	300	3	25	98	186
1956 -----	30	421	602	75	446	399	300	3	25	96	186
1957 -----	30	435	608	77	450	413	300	2	26	96	184
1958 -----	31	479	667	86	454	448	300	2	27	96	178
1959 3/---	31	503	680	89	443	490	300	2	28	97	173

1/ Based on average number for year.
2/ Based on number on farm, Jan. 1.
3/ Preliminary.

Table 12.--Production, disposition, and value of milk, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Cows milked	Milk production		Disposition of milk			Value of milk		
		Per cow	Total	Calves	Household	Sold	Price per 100 lb. 1/	Production	Sales 2/
	Number	Pounds	100 lbs.	100 lbs.	100 lbs.	100 lbs.	Dollars	Dollars	Dollars
1930 ------	13.1	5,249	688	14	42	632	1.55	1,066	979
1931 ------	13.4	5,164	692	13	43	636	1.15	796	732
1932 ------	13.9	5,059	703	13	46	644	.88	619	567
1933 ------	14.6	4,972	726	13	47	666	.87	632	579
1934 ------	14.5	4,529	657	11	44	602	1.05	690	632
1935 ------	14.0	4,745	664	11	42	611	1.25	830	764
1936 ------	13.8	5,055	698	12	41	645	1.47	1,026	947
1937 ------	13.9	4,949	688	12	40	636	1.50	1,032	954
1938 ------	14.1	5,263	742	14	38	690	1.25	928	862
1939 ------	14.5	5,237	759	15	37	707	1.15	873	814
1940 ------	15.0	5,317	798	15	37	745	1.30	1,037	969
1941 ------	15.5	5,549	860	15	36	809	1.55	1,333	1,254
1942 ------	16.1	5,586	899	16	33	850	1.89	1,699	1,606
1943 ------	16.6	5,426	901	16	34	851	2.42	2,180	2,059
1944 ------	16.7	5,292	884	15	34	835	2.88	2,546	2,405
1945 ------	16.5	5,602	924	15	32	877	2.97	2,744	2,605
1946 ------	16.5	5,854	966	15	29	922	3.52	3,400	3,245
1947 ------	16.1	5,843	941	15	29	897	3.26	3,068	2,924
1948 ------	15.8	5,885	930	15	28	887	3.75	3,488	3,325
1949 ------	16.0	6,259	1,001	16	27	958	2.84	2,843	2,720
1950 ------	16.1	6,268	1,009	16	28	965	2.91	2,936	2,808
1951 ------	16.1	6,346	1,022	18	30	973	3.46	3,536	3,368
1952 ------	16.7	6,514	1,088	18	29	1,041	3.66	3,982	3,810
1953 ------	17.9	6,660	1,192	17	26	1,149	3.25	3,874	3,736
1954 ------	18.5	6,597	1,220	17	26	1,177	2.95	3,599	3,473
1955 ------	19.0	6,808	1,294	18	26	1,249	2.94	3,804	3,672
1956 ------	19.4	7,166	1,390	18	26	1,346	3.01	4,184	4,052
1957 ------	19.7	7,238	1,426	22	24	1,380	3.03	4,321	4,182
1958 ------	19.7	7,600	1,497	23	23	1,451	2.96	4,431	4,296
1959 3/----	19.8	7,950	1,574	23	23	1,528	3.01	4,738	4,598

1/ Based on average return per 100 lbs. for all milk and cream sold including Government dairy payments 1943-46. Payments were as follows: 1943 - $41, 1944 - $326, 1945 - $403, 1946 - $287.

2/ Calculated from unrounded data.

3/ Preliminary.

Table 13.—Cash receipts and other income, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Cash receipts from -								Other income		Gross farm income
	Milk 1/	Cattle and calves	Hogs	Eggs	Chickens	Corn	Govt. payments 2/	All sources	Perqui-sites	Inventory change 3/	
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1930 ----	979	240	526	134	79	---	---	1,958	420	77	2,455
1931 ----	732	147	389	97	82	---	---	1,447	349	-124	1,672
1932 ----	567	107	207	69	56	---	---	1,006	289	80	1,375
1933 ----	579	93	222	70	43	---	7	1,014	261	- 8	1,267
1934 ----	632	145	240	99	61	---	100	1,277	287	-541	1,023
1935 ----	764	201	320	153	91	---	65	1,594	340	213	2,147
1936 ----	947	189	537	132	84	---	80	1,969	358	-271	2,056
1937 ----	954	215	455	142	87	---	55	1,908	365	199	2,472
1938 ----	862	212	472	141	68	---	68	1,823	336	64	2,223
1939 ----	814	211	414	115	53	---	110	1,717	304	221	2,242
1940 ----	969	253	447	140	60	---	102	1,971	327	59	2,357
1941 ----	1,254	292	663	215	79	---	102	2,605	369	156	3,130
1942 ----	1,606	382	1,040	380	128	---	102	3,638	431	226	4,295
1943 ----	2,018	465	1,344	591	244	---	105	4,767	509	-337	4,939
1944 ----	2,079	486	1,097	540	232	---	357	4,791	496	-282	5,005
1945 ----	2,202	510	919	639	226	77	437	5,010	535	52	5,597
1946 ----	2,958	531	1,288	658	222	102	320	6,079	608	- 92	6,595
1947 ----	2,924	891	1,757	736	189	346	33	6,876	667	-717	6,826
1948 ----	3,325	967	1,500	706	148	250	17	6,913	699	612	8,224
1949 ----	2,720	807	1,373	694	126	270	33	6,023	604	173	6,800
1950 ----	2,808	1,076	1,434	564	109	290	37	6,318	626	-156	6,788
1951 ----	3,368	1,349	1,695	775	124	266	35	7,612	731	355	8,698
1952 ----	3,810	881	1,568	643	93	386	30	7,411	739	627	8,777
1953 ----	3,736	731	1,617	789	97	542	31	7,543	731	72	8,346
1954 ----	3,473	802	1,672	583	66	388	18	7,002	682	298	7,982
1955 ----	3,672	812	1,350	673	69	451	21	7,048	670	268	7,986
1956 ----	4,052	746	1,258	674	55	801	65	7,651	679	213	8,543
1957 ----	4,182	960	1,502	586	42	609	78	7,959	717	143	8,819
1958 ----	4,296	1,292	1,750	572	48	465	37	8,460	743	255	9,458
1959 4/--	4,598	1,318	1,477	444	28	586	35	8,486	727	- 19	9,194

1/ Excludes dairy payments amounting to $1,057 in 1943-46.
2/ Includes dairy payments in 1943-46.
3/ Changes in value of livestock and feed at year-end prices.
4/ Preliminary.

Table 14. — Income and related data, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Gross farm income					Operating expenses			Net farm income 2/	Net cash farm income 3/
	Cash receipts	Value of perquisites: Food and fuel	Value of perquisites: Net house rent	Change in inventory of crops and livestock	Total	Cash expenses	Change in inventory of machinery and buildings 1/	Total		
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1930 -----	1,958	258	162	77	2,455	1,229	- 96	1,325	1,130	729
1931 -----	1,447	196	153	-124	1,672	1,047	- 144	1,191	481	400
1932 -----	1,006	154	135	80	1,375	858	- 159	1,017	358	148
1933 -----	1,014	152	109	- 8	1,267	772	- 128	900	367	242
1934 -----	1,277	162	125	-541	1,023	877	- 97	974	49	400
1935 -----	1,594	228	112	213	2,147	1,008	- 28	1,036	1,111	586
1936 -----	1,969	239	119	-271	2,056	1,093	- 1	1,094	962	876
1937 -----	1,908	240	125	199	2,472	1,228	15	1,213	1,259	680
1938 -----	1,823	209	127	64	2,223	1,189	- 1	1,190	1,033	634
1939 -----	1,717	190	114	221	2,242	1,180	- 3	1,183	1,059	537
1940 -----	1,971	197	130	59	2,357	1,324	14	1,310	1,047	647
1941 -----	2,605	244	125	156	3,130	1,550	107	1,443	1,687	1,055
1942 -----	3,638	302	129	226	4,295	1,835	51	1,784	2,511	1,803
1943 -----	4,767	369	140	-337	4,939	2,058	- 54	2,112	2,827	2,709
1944 -----	4,791	350	146	- 282	5,005	2,325	- 2	2,327	2,678	2,466
1945 -----	5,010	386	149	52	5,597	2,537	58	2,479	3,118	2,473
1946 -----	6,079	426	182	- 92	6,595	2,971	186	2,785	3,810	3,108
1947 -----	6,876	479	188	- 717	6,826	3,565	387	3,178	3,648	3,311
1948 -----	6,913	489	210	612	8,224	4,095	562	3,533	4,691	2,818
1949 -----	6,023	393	211	173	6,800	4,050	513	3,537	3,263	1,973
1950 -----	6,318	396	230	-156	6,788	4,206	454	3,752	3,036	2,112
1951 -----	7,612	476	255	355	8,698	4,558	452	4,106	4,592	3,054
1952 -----	7,411	455	284	627	8,777	4,597	261	4,336	4,441	2,814
1953 -----	7,543	425	306	72	8,346	4,591	210	4,381	3,965	2,952
1954 -----	7,002	407	275	298	7,982	4,591	62	4,529	3,453	2,411
1955 -----	7,048	379	291	268	7,986	4,572	13	4,559	3,427	2,476
1956 -----	7,651	379	300	213	8,543	4,593	- 35	4,628	3,915	3,058
1957 -----	7,959	383	334	143	8,819	4,890	- 10	4,900	3,919	3,069
1958 -----	8,460	394	349	255	9,458	5,222	9	5,213	4,245	3,238
1959 4/---	8,486	353	374	- 19	9,194	5,495	- 4	5,499	3,695	2,991

1/ Increases in inventories subtracted from and decreases added to cash expenses.
2/ Gross farm income minus total operating expenses.
3/ Cash receipts minus cash expenditures.
4/ Preliminary.

Table 15. —Cash expenditures for goods and services used in production, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Livestock and crop expense					Power and machinery	Farm buildings and fences	Hired labor	Taxes	Other	Total cash expenditures
	Feed	Livestock purchased	Other livestock expense	Fertilizer and lime	Other crop expense						
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1930 --	108	15	71	3	90	395	76	261	182	28	1,229
1931 --	105	14	63	3	86	309	48	210	181	28	1,047
1932 --	90	10	54	1	64	265	23	154	169	28	858
1933 --	78	10	52	1	53	241	27	144	137	29	772
1934 --	106	11	56	1	65	288	34	149	137	30	877
1935 --	93	16	52	1	106	374	54	153	124	35	1,008
1936 --	141	18	55	2	72	425	65	154	130	31	1,093
1937 --	142	16	58	3	108	486	77	162	142	34	1,228
1938--	119	18	58	3	92	495	80	153	139	32	1,189
1939 --	106	16	60	3	73	506	86	146	140	44	1,180
1940 --	108	17	65	3	80	590	106	166	148	41	1,324
1941 --	129	20	71	6	77	744	115	205	145	38	1,550
1942 --	219	22	90	14	109	786	117	275	155	48	1,835
1943 --	315	53	116	16	134	753	114	347	163	47	2,058
1944 --	376	63	122	24	149	873	115	382	167	54	2,325
1945 --	406	64	125	35	150	1,016	125	374	182	60	2,537
1946 --	515	51	136	40	155	1,133	304	361	211	65	2,971
1947 --	616	56	149	48	202	1,463	378	351	233	69	3,565
1948 --	589	44	157	65	249	1,835	442	341	295	78	4,095
1949 --	524	58	163	59	222	1,979	379	251	328	87	4,050
1950 --	550	55	173	64	229	1,996	423	257	365	94	4,206
1951 --	645	58	195	63	235	2,122	510	259	372	99	4,558
1952 --	665	57	208	74	263	2,055	504	253	415	103	4,597
1953 --	597	62	211	96	229	2,073	505	253	448	117	4,591
1954 --	685	71	222	103	221	1,988	455	245	470	131	4,591
1955 --	651	54	233	123	250	1,955	458	246	466	136	4,572
1956 --	643	63	244	125	209	1,980	467	249	491	122	4,593
1957 --	647	51	249	150	250	2,142	479	267	518	137	4,890
1958 --	679	61	261	162	229	2,271	525	296	572	166	5,222
1959 1/	702	52	277	175	254	2,395	536	316	625	163	5,495

1/ Preliminary.

Table 16.—Value of physical assets, commercial family-operated dairy-hog farms, southeastern Minnesota, Jan. 1, 1930-59

Year	Real estate				Other				Total farm capital
	Land	Dwelling	Other buildings	Total	Machinery	Livestock	Feed	Total	
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1930 ------	8,310	2,030	2,520	12,860	1,100	2,160	900	4,160	17,020
1931 ------	6,870	1,910	2,370	11,150	1,070	1,630	790	3,490	14,640
1932 ------	5,520	1,690	2,090	9,300	980	1,060	480	2,520	11,820
1933 ------	4,530	1,360	1,690	7,580	870	830	330	2,030	9,610
1934 ------	4,960	1,570	1,940	8,470	840	860	520	2,220	10,690
1935 ------	4,770	1,400	1,740	7,910	840	930	710	2,480	10,390
1936 ------	5,060	1,490	1,840	8,390	890	1,620	490	3,000	11,390
1937 ------	5,520	1,570	1,940	9,030	980	1,580	780	3,340	12,370
1938 ------	5,550	1,580	1,970	9,100	1,080	1,680	580	3,340	12,440
1939 ------	4,800	1,430	1,770	8,000	1,100	1,690	500	3,290	11,290
1940 ------	4,730	1,620	2,020	8,370	1,130	1,730	640	3,500	11,870
1941 ------	4,740	1,560	1,940	8,240	1,260	1,770	810	3,840	12,080
1942 ------	5,310	1,610	2,000	8,920	1,570	2,430	1,060	5,060	13,980
1943 ------	5,870	1,740	2,170	9,780	1,790	3,410	1,230	6,430	16,210
1944 ------	6,300	1,830	2,270	10,400	1,970	3,310	1,380	6,660	17,060
1945 ------	6,450	1,860	2,320	10,630	2,110	3,040	1,350	6,500	17,130
1946 ------	7,230	2,270	2,830	12,330	2,300	3,400	1,300	7,000	19,330
1947 ------	7,650	2,350	2,930	12,930	2,630	4,490	1,630	8,750	21,680
1948 ------	8,530	2,630	3,270	14,430	3,230	5,030	2,760	11,020	25,450
1949 ------	8,770	2,640	3,280	14,690	3,980	5,680	2,370	12,030	26,720
1950 ------	9,180	2,870	3,570	15,620	4,470	5,040	2,180	11,690	27,310
1951 ------	10,880	3,190	3,960	18,030	5,210	6,420	2,360	13,990	32,020
1952 ------	12,100	3,550	4,410	20,060	5,700	7,230	2,440	15,370	35,430
1953 ------	12,960	3,820	4,750	21,530	5,900	5,960	2,870	14,730	36,260
1954 ------	11,890	3,430	4,270	19,590	6,060	5,020	2,680	13,760	33,350
1955 ------	12,640	3,640	4,530	20,810	6,110	4,560	2,800	13,470	34,280
1956 ------	13,520	3,760	4,810	22,090	6,200	4,430	2,720	13,350	35,440
1957 ------	15,020	4,170	5,350	24,540	6,410	4,710	3,000	14,120	38,660
1958 ------	16,360	4,360	5,670	26,390	6,660	5,830	2,530	15,020	41,410
1959 1/----	17,640	4,680	6,040	28,360	6,930	7,190	2,780	16,900	45,260

1/ Preliminary.

Table 17. —Capital and labor used, charge for capital, and returns to unpaid labor, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

Year	Net farm income	Capital			Return to operator and family for labor and management			Labor used		
		Total	Interest rate	Charge for capital	In current dollars	In 1937-41 dollars	Per hour	Operator and family	Hired	Total
	Dollars	Dollars	Percent	Dollars	Dollars	Dollars	Dollars	Hours	Hours	Hours
1930 ---	1,130	17,020	5.5	936	194	167	0.05	4,270	920	5,190
1931 ---	481	14,640	5.5	805	-324	-324	-.07	4,340	950	5,290
1932 ---	358	11,820	5.5	650	-292	-344	-.07	4,320	960	5,280
1933 ---	367	9,610	5.5	529	-162	-186	-.04	4,260	1,030	5,290
1934 ---	49	10,690	5.0	534	-485	-495	-.12	4,130	960	5,090
1935 ---	1,111	10,390	5.0	520	591	591	.15	4,040	790	4,830
1936 ---	962	11,390	4.0	456	506	506	.12	4,110	730	4,840
1937 ---	1,259	12,370	4.0	495	764	742	.18	4,140	660	4,800
1938 ---	1,033	12,440	4.0	498	535	546	.13	4,140	640	4,780
1939 ---	1,059	11,290	4.0	452	607	626	.15	4,160	620	4,780
1940 ---	1,047	11,870	4.0	475	572	590	.14	4,110	720	4,830
1941 ---	1,687	12,080	4.0	483	1,204	1,147	.29	4,180	710	4,890
1942 ---	2,511	13,980	4.0	559	1,952	1,627	.45	4,360	730	5,090
1943 ---	2,827	16,210	4.0	648	2,179	1,626	.48	4,580	720	5,300
1944 ---	2,678	17,060	4.0	682	1,996	1,416	.44	4,530	710	5,240
1945 ---	3,118	17,130	4.0	685	2,433	1,655	.54	4,520	630	5,150
1946 ---	3,810	19,330	4.0	773	3,037	1,863	.69	4,430	560	4,990
1947 ---	3,648	21,680	4.0	867	2,781	1,456	.65	4,310	520	4,830
1948 ---	4,691	25,450	4.0	1,018	3,673	1,818	.87	4,200	450	4,650
1949 ---	3,263	26,720	4.0	1,069	2,194	1,119	.53	4,110	360	4,470
1950 ---	3,036	27,310	4.0	1,092	1,944	982	.50	3,890	360	4,250
1951 ---	4,592	32,020	4.0	1,281	3,311	1,533	.90	3,670	320	3,990
1952 ---	4,441	35,430	4.0	1,417	3,024	1,387	.86	3,520	300	3,820
1953 ---	3,965	36,260	4.0	1,450	2,515	1,164	.73	3,430	290	3,720
1954 ---	3,453	33,350	4.0	1,334	2,119	972	.60	3,550	290	3,840
1955 ---	3,427	34,280	4.0	1,371	2,056	943	.57	3,590	290	3,880
1956 ---	3,915	35,440	4.0	1,418	2,497	1,135	.69	3,630	290	3,920
1957 ---	3,919	38,660	4.5	1,740	2,179	956	.60	3,620	290	3,910
1958 ---	4,245	41,410	5.5	2,278	1,967	848	.54	3,620	310	3,930
1959 1/-	3,695	45,260	5.0	2,263	1,432	617	.40	3,610	320	3,930

1/ Preliminary.

Table 18. - Index numbers of income, production, prices, costs, and related factors, commercial family-operated dairy-hog farms, southeastern Minnesota, 1930-59

(1947-49 = 100)

Year	Farm income		Crop yield	Net production		Operating expense—	Total cost—	Production per unit of input	Power and machinery, Jan. 1	Prices rec'd.	Prices paid including wages for hired labor
	Gross	Net		Per farm	Per hour of man labor	Per unit of prod.					
1930--	34	29	87	76	68	54	65	84	60	45	54
1931--	23	12	63	69	61	51	59	77	59	31	47
1932--	19	9	85	77	68	40	42	87	56	23	40
1933--	17	9	79	75	66	37	37	85	51	22	36
1934--	14	1	52	53	48	54	55	64	48	26	40
1935--	29	29	92	74	71	42	43	89	46	39	45
1936--	28	25	70	65	62	50	51	78	48	43	47
1937--	34	33	94	78	76	47	49	92	50	44	53
1938--	31	27	85	78	76	46	48	91	54	38	51
1939--	31	27	108	90	87	40	41	102	55	33	50
1940--	32	27	102	89	86	45	43	98	58	34	50
1941--	43	44	100	91	87	48	48	98	62	46	54
1942--	59	65	108	97	89	55	57	100	71	60	62
1943--	68	73	98	93	82	67	72	93	79	71	68
1944--	69	69	96	89	79	76	83	90	83	70	73
1945--	77	81	97	95	85	76	83	94	86	73	76
1946--	91	99	99	97	90	84	89	95	92	88	81
1947--	94	94	93	93	90	99	100	94	92	101	93
1948--	113	121	108	103	102	101	103	102	99	111	103
1949--	93	85	99	104	108	100	97	104	109	88	104
1950--	93	78	93	102	111	108	101	102	121	89	106
1951--	119	119	104	110	128	110	103	110	132	107	113
1952--	121	115	115	116	142	110	102	117	139	101	118
1953--	115	103	104	117	146	111	103	116	144	96	116
1954--	110	89	111	123	149	108	97	120	144	87	117
1955--	110	89	118	132	158	102	92	126	143	81	116
1956--	117	101	128	139	165	99	91	132	139	82	116
1957--	121	101	124	139	165	105	98	129	136	85	120
1958--	130	110	129	143	169	108	104	130	136	89	122
1959 1/	126	96	127	151	178	108	102	135	136	82	125

1/ Preliminary

* U.S. GOVERNMENT PRINTING OFFICE : 1960 O—565862